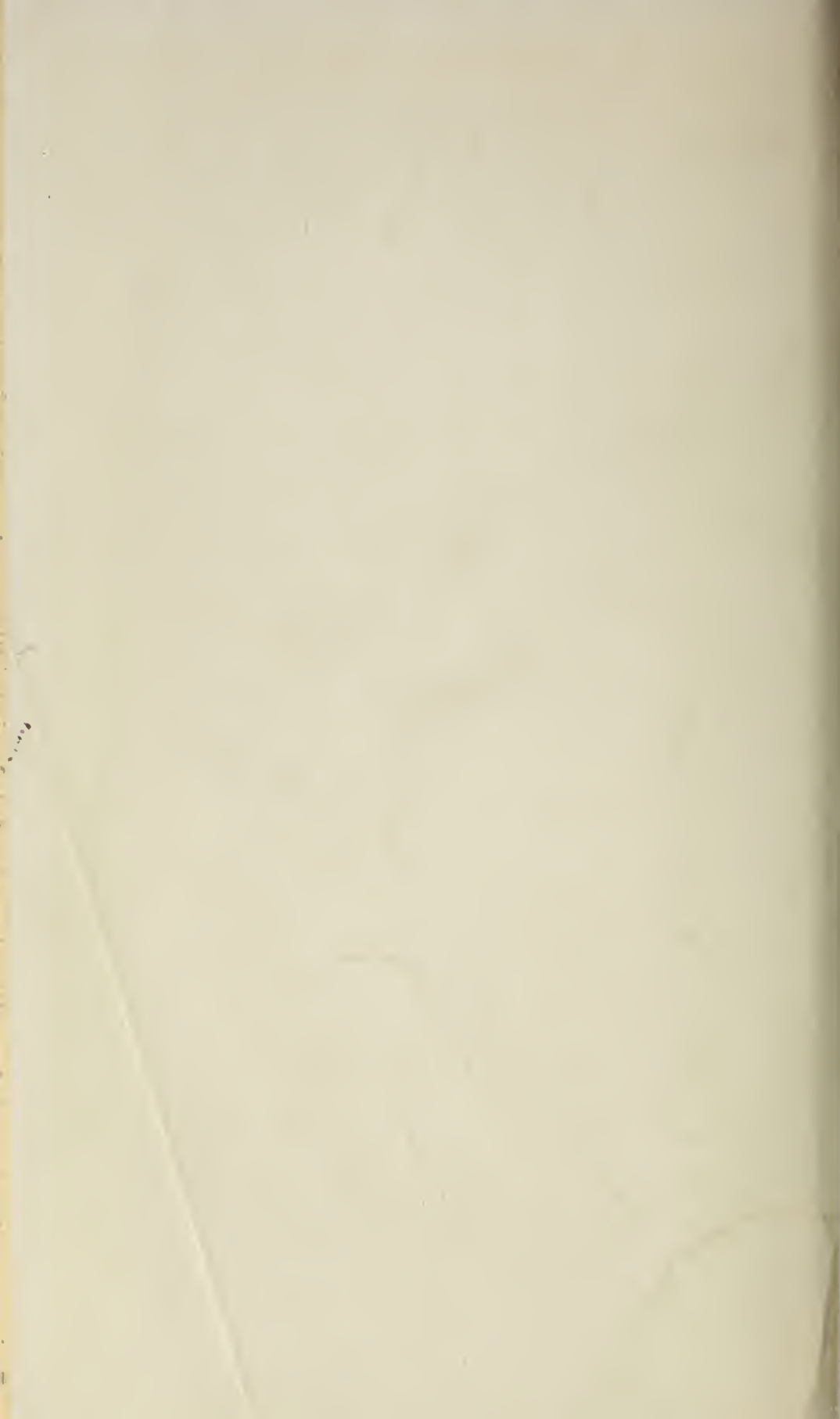


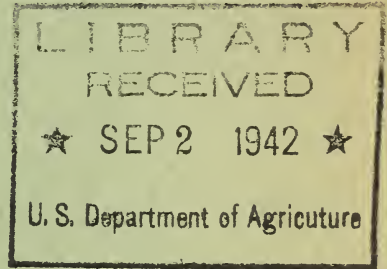
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# INSPECTION AND CONTROL OF WEIGHTS AND MEASURES IN THE UNITED STATES

GEORGE W. HERVEY and REIGN S. HADSELL



CONSUMERS' COUNSEL DIVISION  
U. S. Department of Agriculture

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# INSPECTION AND CONTROL OF WEIGHTS AND MEASURES IN THE UNITED STATES

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## Summary

The present report is an outgrowth of action taken by the National Conference on Weights and Measures, in session at the National Bureau of Standards, Washington, D. C., in June 1937. The Conference passed a resolution offering cooperation in conducting a survey of weights and measures laws and their administration, if the Consumers' Counsel Division, United States Department of Agriculture, would assume the responsibility for making such a survey. In March 1938, schedules were accordingly mailed to 338 officials whose names were entered on the mailing list of the Division of Weights and Measures, National Bureau of Standards, and to similar officials in each of 35 cities, ranging in population from 300,000 to 458,000.

Two types of schedules were used in the survey: One for determining the extent that local weights and measures laws conformed with a model law recommended by the National Conference on Weights and Measures, and the other for obtaining information on administrative matters connected with the weights and measures programs in various States, cities, and counties. Schedules of the first type were filled out, partly or completely, by 24.4 percent of the officials addressed, and the second by 44.8 percent. As a supplementary survey activity, numerous comments on matters affecting the programs in their jurisdictions were secured by letter from the proper State authorities.

In addition to the information acquired through the survey, this report contains a discussion of the historical background of the subject of weights and measures, and a brief review of relevant details of an inquiry into chain-store marketing and distribution, begun in 1928 by the Federal Trade Commission. A tabular summary of Federal laws and regulations pertaining to weights and measures, and a selected, annotated bibliography are also included.

**Historical developments.**—Uniform weights and measures is a subject which has intermittently engaged the attention of political leaders and legislators since Colonial days. The need for standardized systems for all the States in the Union was definitely recognized in both the Articles of Confederation and the Constitution. President Washington on four occasions called the attention of Congress to the importance of effecting uniformity in the currency and in weights and measures. Thomas Jefferson, Secretary of State under Washington, and John Quincy Adams, Secretary under Monroe, wrote notable reports on the subject for the information of Congress.

The first Federal law devoted primarily to weights and measures was passed in 1799. By the terms thereof, the surveyor at each port was directed to compare weights and measures in use (for determining duties on imports) with standards to be furnished the collector of customs. Since legal standards had never been adopted, this law was destined to remain ineffective for a period of nearly 36 years. The first weights and measures legislation which was really operative was the Mint Act of 1828 by which a standard troy pound was adopted for the regulation of coinage.

The subject of standardization was accorded recognition in various congressional resolutions during the period 1830-38. Subsequently, an Office of Weights and Measures was established in the Coast Survey. Proper weights and measures were constructed and finally placed in use at the customs houses in 1839. By 1850 sets had also been delivered to each State governor. In addition, sets were sent to England, France, Japan, and Siam.

Use of the metric system was sanctioned in 1866. However, Federal metric standards were not made mandatory.

In the following quarter of a century there was little relevant Federal legislation of importance. By a law passed in 1881 the State land-grant colleges and the Smithsonian Institution were provided with sets of all the weights and measures which had been considered as standard. Laws in 1890 and 1894, and amendments in subsequent years, were concerned with repairs and replacements of these standards.

A very constructive development was the establishment of the National Bureau of Standards by an act of Congress approved March 3, 1901. (The Office of Weights and Measures, previously in the Coast Survey, became in effect a division in the new organization.) Since 1901 the National Bureau of Standards has actively promoted the use of uniform and accurate weights and measures.

A movement toward standardization of containers resulted in 1912 in the passage of the Standard Apple Barrel Act which was superseded in 1915 by the Standard Barrel Act. In 1916 and 1928 Standard Container Acts were passed. These last two acts dealt with capacities and dimensions of containers for fruits and vegetables.

Several additional laws and regulations have related in part to weights and measures. Requirements for a standard fill of containers, and for labels, were incorporated in the Federal Food, Drug, and Cosmetic Act (1938). Internal revenue provisions include references to weights and measures, notably in regulations governing the sale of liquor. In tariff laws methods are described for calculating duties on imported grain, and standard weights given for bushels of wheat, corn, rye, barley, oats, peas, and buckwheat. Standard weights are also mentioned in shipping laws and in those pertaining to the mails.

Of particular interest to consumers were two bills introduced by Representative A. L. Somers in the Seventy-sixth Congress. By the terms of the first bill (H. R. 4402), which was similar to one introduced in the preceding Congress by Representative Harry Sauthoff, standards were proposed for the dimensions and capacities for 11 sizes of metal containers for canned fruits and vegetables, and 3 sizes of containers for canned milk. The second (H. R. 5530) was designed to combine in a single law the Standard Barrel Act of 1915 and the Standard Container Acts of 1916 and 1928, to reestablish the standards defined in these acts, and to set up additional standards for fruit and vegetable containers (drums, cartons, crates, boxes, etc.).

Numerous other bills have been concerned with a variety of matters affecting weights and measures. For example, efforts have been made to effect greater uniformity in the State laws on the bushel weights of various commodities, and to establish standard weights for loaves of bread, and for flour, meal, and feed. Bills to grant to the National Bureau of Standards certain regulatory control over

weighing and measuring devices throughout the country have been introduced in many sessions of Congress since 1910.

**State weights and measures services.**—The information which was received through correspondence, as distinguished from that furnished on the survey schedules, disclosed the general character of the State weights and measures programs.

Supervision of weights and measures was exclusively under State auspices in nine States (Idaho, Minnesota, Montana, Nevada, North Dakota, South Carolina, South Dakota, Vermont, and Wyoming).

Supervisory responsibility was divided between State and local authorities in 29 States (Alabama, Arizona, California, Connecticut, Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Nebraska, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, Tennessee, Texas, Utah, Virginia, Washington, West Virginia, and Wisconsin). In some instances the State bureau exercised general control over the programs of local bureaus, in other instances very little.

No general State weights and measures programs had been inaugurated in six States (Arkansas, Delaware, Maryland, Mississippi, Missouri, and Oklahoma). Moreover, in most of these States the local enforcement programs were extremely weak, and quite often confined to a few of the larger cities.

Specialized laws, regulating the sale of petroleum products, were in effect in four States (Colorado, Florida, Georgia, and New Mexico). Florida consumers, by a State Food and Drug Act, were afforded additional protection against improper weighing or measuring. All such laws were too restrictive, however, to be considered as general weights and measures statutes.

Too small appropriations hindered proper enforcement in some States. According to respondents, increases of 50, 65, and 100 percent were needed in Vermont, New Jersey, and North Carolina, respectively. Insufficient personnel was a common complaint. One sealer (Northwestern State) commented on the inadequate budgets of both the State and city departments. Several officials were unable to understand why a service which offers so much return in terms of dollars and cents was so poorly supported.

Need of equipment for testing large-capacity scales was mentioned by officials representing five jurisdictions (North Carolina, Wisconsin, North Dakota, Utah, and the District of Columbia), while equipment for testing large meters and tank trucks was lacking in two States (Indiana and South Carolina).

Enforcement programs carried on by local officials were frequently regarded as unsatisfactory; in some cases State officials could exercise little supervision over local programs. Unfavorable comment was received concerning the practice of having county clerks, clerks of court, constables, marshals, sheriffs, or inspectors of provisions take care of weights and measures activities. This arrangement existed in four States (Mississippi, Missouri, New Mexico, and Arkansas).

**Purpose of model law.**—The model State law on weights and measures is recognized as the most satisfactory basis for developing local or State regulation in the field of weights and measures. It has been recommended by both the National Conference on Weights and Measures and the National Bureau of Standards.



Since 1905 uniformity in relevant State legislation has been considered at the annual conferences of experienced weights and measures officials, held at the National Bureau of Standards. In 1911 the conference first endorsed the text of the model law as drafted by the Bureau. From time to time the contents have been rearranged and amended in the light of experience and technical developments. The text is now available in three different forms for use by States differing in size and concentration of population. Though prepared for adoption by States, the law can readily be adapted for use as a city ordinance.

**Survey findings.**—In the following paragraphs conditions disclosed by the survey are described in two parts, corresponding to the information furnished on schedule 1 and schedule 2.

**SCHEDULE 1.**—Some of the provisions of the model law were found to be widely accepted, while others had been adopted in comparatively few instances.

The model-law provision requiring that all commercial weighing and measuring devices be tested at least twice a year was in effect in more than one-fourth of the States, one-half of the cities, and two-thirds of the counties included in the survey. In most of the remainder, inspections were required at least once a year. Usually there were regulations providing that new weighing and measuring equipment be tested before being used, and approved equipment sealed or stamped.

The provision that all packages be plainly and conspicuously labeled with their net contents was in nearly all the existing weights and measures laws. The sale of any packaged commodity, if the container thereof was so made, formed, or filled, or so wrapped as to mislead the purchaser, was ordinarily prohibited by local law.

From the standpoint of standardization, inconsistency characterized the survey findings pertaining to the legal units of weight or measure for the principal commodities. The most satisfactory progress toward uniformity was in evidence for milk, cream, butter, and oleomargarine. In regard to containers for milk or cream, the model-law units ( $\frac{1}{2}$  gallon, 3 pints, 1 quart, 1 pint,  $\frac{1}{2}$  pint, and 1 gill) were in effect with few exceptions. For butter or oleomargarine,  $\frac{1}{4}$  pound,  $\frac{1}{2}$  pound, 1 pound,  $1\frac{1}{2}$  pounds, or multiples of 1 pound were likewise quite general.

Wood was ordinarily sold by the cord of 128 cubic feet (model law), although occasionally by some other cord, or by weight; and for coal, charcoal, or coke, the recommended ton of 2,000 pounds predominated. For bread, loaves of  $\frac{1}{2}$  pound, 1 pound,  $1\frac{1}{2}$  pounds, or multiples of 1 pound are specified in the model law, but in less than one-half of the jurisdictions were the units completely in accord with those stated. Very little uniformity had been achieved in the units reported for flour, grain, potatoes, celery, lettuce, maple sirup, honey, ice cream, vinegar, alcoholic liquors, salt, poultry, lime, or petroleum products.

Sale of berries and small fruits was generally in accord with the model law (by weight or in specified containers). The legal capacity of barrels for fruits and vegetables other than cranberries was also in agreement.

Proving of standard weights and measures by State standards at least once in 5 years (model law) was compulsory in most of the cities and counties. This requirement was, however, included in only one-half the relevant State laws.

Fines and jail sentences for violations of weights and measures laws in relatively few cases were in complete agreement with those specified by the model law, although partial agreement was often reported. The penalties in effect were considered adequate by approximately three-fourths of the respondents.

The list of prohibited acts stated in the local weights and measures laws was considered sufficiently inclusive by two-thirds of the city and county officials who reported. Opinion to the contrary was expressed by the same proportion of the State officials.

**SCHEDULE 2.**—An ample weights and measures budget usually signified efficient inspectors and satisfactory equipment. For the year preceding the survey, the average per capita budgetary allowance amounted to 2.4 cents for the State weights and measures bureaus; 4.6 cents for the city bureaus; and 4.3 cents for the county bureaus. Financial support usually came from general tax funds, but in a few cases fees were collected for testing and other services.

The problem of keeping down the cost of weights and measures supervision in thinly populated sections was being attacked in a few States by confining the administrative responsibility to counties, rather than towns or townships; in other instances several towns were jointly employing a sealer. In the general opinion of respondents supervision was more effective if sealers were employed on a full-time basis.

Official visits for testing purposes were made during the year to approximately 65 percent of the establishments on the inspection lists of the State weights and measures bureaus, and to 90 percent of those on the lists of the city and county bureaus. These visits ordinarily numbered no more than two per establishment. In some jurisdictions the testing was done only after complaints were received, in others as a regular duty of inspectors.

Tests of scales disclosed a total of 20 percent, or 1 in 5, out of order. This total was made up of 12 percent approved following adjustments, 7 percent condemned for repair, and 1 percent confiscated. The reported data pertained chiefly to small-capacity scales, suitable for weighing quantities up to 400 pounds.

Of the weights checked on, 1 in 25 was faulty. In one-seventh of the jurisdictions no weights were found unsatisfactory, yet the eliminated proportion was often considerably above the general average, in one case (a city) running up to 27.3 percent.

The information regarding pumps and retail-type meters was characterized by marked inconsistencies between jurisdictions. Of the units of apparatus tested, 1 in 9 was unsatisfactory in some respect, and 1 in 11 sufficiently out of order to be designated for repair or confiscation.

Tests of miscellaneous equipment were confined chiefly to milk bottles, lubricating-oil bottles, liquid-capacity measures, and dry-capacity measures. In the aggregate, 3 percent of such equipment was found unfit for further use.

Prosecutions for violations of weights and measures laws averaged less than five per jurisdiction. There were no prosecutions in one-fourth of the jurisdictions, and in more than three-fourths no jail sentences. Fines usually totaled less than \$100.

Evidence of short weighing or measuring of one sort or another, was discovered by the State inspectors in roughly one investigation in five;

by the city inspectors, one in six; and by the county inspectors, one in seven. The ratio appeared to be quite independent of the factor of population; generally speaking, short weighing or measuring was relatively no more prevalent in the small States, cities, or counties than in the large.

For coal, bread, and packages of merchandise, short weight usually aggregated from 5 to 15 percent of the total checked on during the 1-year period. Owing to the character of the data, however, these proportions should be regarded as inferential, not definitely conclusive.

The survey results provide no sound basis for arriving at a general estimation of the extent that commodities were or were not sold according to proper weight or measure. As reported, short weighing or measuring appeared to be much more serious in some jurisdictions than in others. However, variation may have been partly due to differences in (1) stringency of the weights and measures laws; (2) tolerances, or allowable errors; (3) administrative policy (in some bureaus the practice was to make investigations of short weighing only after complaints were filed, whereas in other bureaus such investigations were a regular duty of inspectors); and (4) time and energy which the inspectors themselves devoted to the investigations.

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### Acknowledgments

This study of laws, supervisory programs, and other phases of the subject of weights and measures was made with the assistance of many interested persons, and the cooperation of the Federal Work Projects Administration.

Thanks are due members of the National Conference on Weights and Measures (held annually at the National Bureau of Standards, Washington, D. C.), who supplied the facts regarding weights and measures services in individual States, cities, and counties, together with information concerning relevant laws, ordinances, and regulations.

The advice of Dr. Lyman J. Briggs, Director of the National Bureau of Standards, and Ralph W. Smith and the late F. S. Holbrook, of the Weights and Measures Division of the Bureau, was sought and received throughout the study. From the standpoint of consumer welfare the task of surveying weights and measures administrative programs was attended by numerous practical difficulties, hence the professional knowledge and experience of these gentlemen proved invaluable. Dr. F. W. Miller, in charge, Packers and Stockyards Division, Agricultural Marketing Service, clarified several matters of interpretation; and Samuel Mermin, of the supervisory staff of the Consumer Standards Project (sponsored by the Consumers' Counsel Division), assembled much of the preliminary material for the section on Federal weights and measures laws. Samuel P. Kaidanovsky, Technical Director of the Project, who critically read the entire manuscript, recommended constructive changes in both the form and content of the text.

With the approval of the Federal Work Projects Administration, the acquired data were assembled and tabulated at the Consumer Standards Project, by employees certified from the relief rolls of the District of Columbia.



# INSPECTION AND CONTROL OF WEIGHTS AND MEASURES IN THE UNITED STATES

## Importance of Standardized Weights and Measures

The present report is intended as one means of informing consumers regarding the status of weights and measures control in the United States. Such an objective, though always desirable, now possesses the virtue of special timeliness. Since the major portion of the succeeding text was written, the routine of American living has been interrupted by the outbreak of war. Thousands of families are likely to experience new economic problems through inability to purchase many commodities in accustomed quantities. To meet the changed conditions realistically, sound management is imperative. Willingness to refrain from luxury spending is one responsibility facing consumers. Equally, for those outlays which are necessary, prudent buying decrees that every dollar shall stretch as far as possible.

Wasteful marketing practices, however small in individual instances, tend to increase the cost of living. Effective control of weights and measures can therefore be a unique service to the public during the war period. On the part of enforcement officials the greatest opportunity is offered in connection with retail sales. This is obvious from statistics for leading staple commodities. Our annual domestic consumption of potatoes, for example, now amounts to more than 18 billion pounds,<sup>1</sup> and of motor fuels to almost 25 billion gallons.<sup>2</sup> All but a small proportion of these vast quantities, of course, are in one way or another measured or weighed out to purchasers.

During these trying times, when consumers are being asked to make many sacrifices for the war effort, it should be a matter of foremost consideration for every purchaser to receive full value. Efficiency in buying calls for careful attention to the elements of quantity, quality, and price, particularly in the purchase of food and the maintenance of proper nutritional levels in wartime.

Long ago the Government saw the necessity of standardizing the weight and fineness of metals used in coinage. It has now gone a step further and established price ceilings for many products, and in some instances, quality specifications in relation to price. Because the element of quantity thereby becomes more important than ever, State and local Defense Councils can awaken consumers to the necessity of accurate weights and measures in every community. Many of the facts presented in subsequent pages can be utilized as a basis for action which will lead to adequate regulation.

<sup>1</sup> Agricultural Marketing Service, U. S. Department of Agriculture, *Farm Production, Farm Disposition, and Value of Principal Crops, April 1941*, pp. 60-62.

<sup>2</sup> Bureau of Mines, U. S. Department of Interior, *Minerals Yearbook, Review of 1940*, p. 981.

Weights and measures departments are especially important to business men who need to be certain that goods bought by them meet desired specifications as to weight or volume. State, county, or municipal administrative agencies, that are organized to promote selling on the basis of standardized and accurate weights and measures, protect ethical merchants against unscrupulous traders who offer consumers the lure of reduced prices but who at the same time would defraud them by dishonest practices. The chief function of a weights and measures bureau, according to the National Bureau of Standards, is "To safeguard the public whom it serves in all matters involving the commercial determination of quantity—to see to it that, whenever merchandise or service is bought or sold by weight or measure, a just weight or a just measure of the commodity is delivered and that fraud, carelessness, and ignorance in this connection are eliminated."<sup>3</sup>

Although efficient control of weights and measures is desirable from the standpoint of the public welfare, relatively little popular interest has been displayed in the matter. That fact was emphasized by a survey conducted in 1938 by the Consumers' Counsel Division in cooperation with the United States Office of Education. This survey included a study of programs of consumer education being carried on in elementary and secondary schools, colleges, and universities, and adult education groups. Review of these programs disclosed that the importance of checking the weights and measures of the products bought by consumers is seldom even mentioned. Doubtless this attitude of indifference explains why budgetary provisions for weights and measures administrative agencies are generally meager.

In succeeding pages the significance of weights and measures control, as it relates to consumer welfare, is repeatedly stressed. The subject matter of this report deals largely with the results of a survey of systems of weights and measures administration, conducted by the Consumers' Counsel Division in the spring of 1938 in various States, cities, and counties. Due consideration is given to existing differences between a model law prepared by the National Conference on Weights and Measures (association of weights and measures enforcement officials) and the corresponding laws of each class of jurisdiction. As background for the discussion, the history of weights and measures is reviewed, particularly in regard to the establishment of standards.

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<sup>3</sup> SMITH, RALPH W., *Weights and Measures Administration*, Handbook Series of the National Bureau of Standards, No. 11, p. 6, 1927.

## PART I. HISTORICAL AND LEGAL BACKGROUND <sup>4</sup>

### Adoption of Federal Standards

**Review of basic legislation.**—Uniform weights and measures is a subject which has intermittently engaged the attention of political leaders and legislators since Colonial days. The settlers from Europe used the systems to which they had been accustomed in their mother countries. Owing to the diversity of units, and lack of suitable standards, confusion in trading developed. In the absence of centralized authority, efforts to improve the existing conditions were for the most part futile. Even after the Federal Government was organized in the present form, uniformity was difficult to secure. Down to recent years constructive laws pertaining to weights and measures have often been passed only after incredible delay.

The need for standardized systems for all the States in the Union was definitely recognized in both the Articles of Confederation and the Constitution. The Articles of Confederation (1781) contained the provision that:

The United States in Congress assembled shall also have the sole and exclusive right and power of regulating the alloy and value of coin struck by their own authority, or by that of the respective states—fixing the standard of weight and measures throughout the United States.

When the Constitution became effective in 1789 this power was delegated to the legislative branch of the Government by article I, section 8, which reserved for Congress the power “to coin money, regulate the value thereof, and of foreign coin, and fix the standard of weights and measures.”

President Washington on four occasions called the attention of Congress to the importance of effecting uniformity in the currency and in weights and measures.<sup>5</sup> Pursuant to his first statement, made in the first annual message, communicated January 8, 1790, a resolution was passed to ask Thomas Jefferson, the Secretary of State, to prepare and report to the House of Representatives a plan for remedying the unsatisfactory situation which existed. The report by Jefferson, submitted July 13, 1790, was considered by various committees, and 6 years later, on May 31, 1796, ordered to be printed for the use of the Senate. No weights and measures laws were passed during Washington’s administration nor for 2 years thereafter.

The first Federal law devoted primarily to weights and measures was passed in 1799. By the terms thereof, the surveyor at each port

<sup>4</sup> The historical and legal information presented in the various sections of part I is based on a review of the references given in the footnotes, and publications listed under “Bibliography,” p. 62.

Especially fruitful sources were: FISCHER, LOUIS A., *History of the Standard Weights and Measures of the United States*, National Bureau of Standards Miscellaneous Publication No. 64, 1925, and *Weights and Measures Standardization*, a report of a hearing before the Committee on Coinage, Weights, and Measures, House of Representatives, on a bill to define certain units and to fix the standards of weights and measures of the United States, 1937.

<sup>5</sup> January 8, 1790; December 8, 1790; October 25, 1791; and January 8, 1795.

was directed to compare the weights and measures in use (for determining duties on imports) with standards to be furnished the Collector of Customs. Legal standards had never been adopted, however, hence this law was destined to remain ineffective for a period of nearly 36 years.

Between 1799 and 1830 one serious effort was made to secure legislation by which uniform standards could be definitely established. President Madison<sup>6</sup> expressed the need of such legislation, and in consequence, the Secretary of State, by a Senate resolution of March 3, 1817, was instructed to prepare a report on the matter. Four years afterward (February 22, 1821) John Quincy Adams, Secretary of State, under President Monroe, transmitted what has been referred to as a "classic report on the subject of weights and measures."<sup>7</sup> Despite the interest which this document created, and the passage of several additional resolutions pertaining to weights and measures in 1821 and 1822, no action was taken in the form of an enactment to assure uniformity. For the remainder of this particular period only one other development is worthy of mention—by a resolution on May 16, 1826, certain experiments were to be made "for the purpose of ascertaining the true length of the pendulum, vibrating 60 times in a minute \* \* \* and to compare the length thereof with such measures now in possession of the Government."

Lack of standard weights for regulating coinage meantime wrought confusion. In 1828 an act of Congress, providing for the continuance of the Mint at Philadelphia, contained this mandate:

*And be it further enacted*, That, for the purpose of securing due conformity in weight of the coins of the United States—the brass troy pound weight procured by the minister of the United States in London, in the year one thousand eight hundred and twenty-seven, for the use of the mint, and now in the custody of the Mint at Philadelphia, shall be the standard troy pound of the Mint of the United States, conformably to which the coinage thereof shall be regulated.

This Mint Act of 1828 was distinctive in being the first weights and measures legislation which was really operative.

Two years later another forward step was taken. By a Senate resolution (May 29, 1830) the Secretary of the Treasury was directed to make comparisons of the weights and measures at the various custom houses. Broadly interpreting the resolution, the Secretary instructed the Superintendent of the Coast Survey to proceed with the construction of the proper weights and measures for distribution to the collectors of customs. Formal endorsement of this activity was given in a House resolution (1835), requesting that it be completed without delay. Subsequently two joint resolutions were passed. The first (1836) directed the Secretary to deliver to each State governor a complete set of all weights and measures "now either made or in progress of manufacture"; and the second (1838) required him to also furnish balances.

The provisions of these last resolutions were carried out by the Office of Weights and Measures, which had now been set up in the Coast Survey. The balances were finished by 1838, the new weights and measures were in use at all the ports by 1839, and complete sets

<sup>6</sup> In message to Congress, December 3, 1816.

<sup>7</sup> JONES, SARAH ANN, *Weights and Measures in Congress*, National Bureau of Standards Miscellaneous Publication M 122, p. 10, 1936.



delivered to practically all the States by 1850. In addition, sets were sent to England, France, Japan, and Siam.

The next action by Congress, of general importance in the history of weights and measures in this country, was taken in 1866 when use of the metric system was sanctioned. As the result of legislation in that year, no contract or dealing, or pleading in any court could be deemed invalid on account of reference to metric weights and measures. Federal metric standards were not made mandatory; the legislation simply permitted use of the metric system, and indicated its relation to the system more customarily employed.<sup>8</sup>

In the following quarter of a century there was little congressional legislation of importance on weights and measures. By a law passed in 1881, the State land-grant colleges and the Smithsonian Institution were to be provided with "a complete set of all the weights and measures which had been considered as standard." Laws in 1890 and 1894, and amendments in subsequent years, pertained to repairs and replacements of standards furnished to States and institutions.

An act of Congress, approved March 3, 1901, provided that "The Office of Standard Weights and Measures shall hereafter be known as the National Bureau of Standards." This Office, hitherto in the Coast Survey, became in effect the Division of Weights and Measures in the new organization. Since 1901 the Bureau has functioned as a national center for testing, for promoting the use of uniform and accurate weights and measures, and for the conduct of research and the dissemination of technical information in the field of standards.

**Standards for special uses.**—A Federal enactment in 1893 established "the only standard gage for sheet and plate iron and steel in the United States of America." For each number of gage, tables specified the approximate thickness (in inches and millimeters), weight per square foot (in ounces, pounds, and kilograms), and weight per square meter (in pounds and kilograms). The Secretary of the Treasury was required to prepare suitable standards in accordance with this law.

Legal units of electrical measure in the United States were defined by Congress in 1894. These units were the ohm (resistance), the ampere (current), the volt (electromotive force), the coulomb (quantity), the farad (capacity), the joule (work), the watt (power), and the henry (induction). "Standard specifications" for some of the processes mentioned in the definitions of the ampere and volt were stated to be "such specifications of details, prescribed and published

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<sup>8</sup> The present metric standards of length and mass for practically the whole civilized world have resulted from the formation of the International Bureau of Weights and Measures. In 1875 representatives of 17 nations, including the United States, signed a convention to the effect that a permanent International Bureau of Weights and Measures, under the control of a board of 14 members, should be established and maintained near Paris. The International Bureau has been responsible for verifying new metric standards, has had custody of prototypes used internationally, and has periodically compared the respective national standards with these prototypes.

Duplicates of the standard meter and kilogram were brought to this country in 1889. According to the *Washington (D. C.) Star* of January 2, 1890, "President Harrison officially received and opened the national prototypes that were allotted to the United States at the International Convention of Weights and Measures held in Paris. They are a kilogram and a meter and will now be regarded as the national standards of weight and length. The formal opening of the boxes was attended with quite a little ceremony in the presence of a large number of invited guests, prominent in scientific and official circles. The new standards will be of great value, as they are the exact counterparts of the official or international prototypes which are preserved with the utmost care in Paris." These duplicates are now kept at the National Bureau of Standards, Washington, D. C.

by the National Academy of Sciences, as shall be necessary for the practical application of the definitions."

Standardization of screw threads was provided by a Federal statute of 1918. Subject to the approval of the Secretaries of Navy, War, and Commerce, standards established by the Commission for the Standardization of Screw Threads were to be used in factories controlled by the War and Navy Departments, and as far as possible, in all screw-thread specifications in proposals for manufactured material to be used under the direction of these departments. The Secretary of Commerce was directed to "promulgate such standards for use by the public and cause the same to be published as a public document."<sup>9</sup>

Bases for the establishment of standard time for each of five designated zones were defined by Congress in a law passed in 1918 and amended in 1921. The time of the appropriate zone was to govern the movement of interstate carriers, and be applicable to all Federal laws and regulations relating to time of performance of any act by Federal agencies or officials, or relating to time within which any rights accrue or determine, or within which any act shall or shall not be performed by any person subject to Federal jurisdiction.

**Containers.**—An important development in Federal standardization of containers was the enactment of the Standard Barrel Act in 1915. This act fixed the dimensions of a barrel for fruits and vegetables and other dry commodities, and a special barrel for cranberries.<sup>10</sup> The law was passed under Congress' power over weights and measures rather than power over interstate commerce, hence applies to intra-state as well as interstate transactions, and supersedes conflicting State laws and city ordinances. It is forbidden, under this law, to sell, offer or expose for sale, fruits, vegetables, or any other dry commodities in barrels that are not of the standard size or permitted subdivisions thereof.

The Standard Container Act of 1916 established standard capacities and dimensions of climax (grape) baskets, and capacities for berry boxes, and till (small fruit and vegetable) baskets. This act, passed under Congress' power over interstate commerce, forbids the manufacture for shipment, sale for shipment, or shipment in interstate commerce of any climax, berry, or till baskets except those meeting the standards.

Standards for "large" and "small" barrels for lime were established in 1916. By a law passed in that year it was declared unlawful to sell or offer for sale imported barrels of lime, or to sell or offer for shipment in interstate commerce barrels containing that com-

<sup>9</sup> The National Screw Thread Commission was abolished in 1933 by Executive Order 6166, issued under authority of Appropriation Act for Treasury and Post Office Departments, passed March 3, 1933, containing provisions for reorganizations within the executive branch of the Government (Public No. 428, 47 Stat. 1517). Its records, properties, facilities, equipment, and supplies were transferred to the Department of Commerce.

To safeguard the interests of the Federal Government in the specification, purchase, and inspection of screw-thread products, an Interdepartmental Screw Thread Committee, which carries on many of the duties formerly performed by the National Screw Thread Commission, has been established by the Departments of War, Navy, and Commerce. The Committee acts in close cooperation with industry through liaison representatives of the American Standards Association. Three groups participate in this cooperative activity: the Sectional Committee on Standardization and Unification of Screw Threads (organized under the procedure of the American Standards Association), and two member bodies of the association, the American Society of Mechanical Engineers, and the Society of Automotive Engineers.

<sup>10</sup> The container provisions of an earlier law, the Apple Barrel Act of 1912, were superseded by the Standard Barrel Act of 1915.

modity unless marked with the standard weight; or to sell in interstate or foreign commerce lime in containers of less capacity than the standard small barrel, unless sold in fractional parts of said barrel, with the net weight and certain other information stated on the container.

The next step in Federal standardization of containers was taken in 1928. The Standard Container Act of that year specified capacities for hampers, round-stave baskets, and splint or market baskets for fruits and vegetables. The law required the manufacturers to have specifications approved by the Bureau of Agricultural Economics, United States Department of Agriculture.<sup>11</sup> The manufacture, sale, and shipment of nonstandard capacity and nonapproved hampers, round-stave and splint baskets were forbidden; seizure of nonstandard capacity baskets by the Secretary of Agriculture was authorized.

The Standard Container Act of 1928 differed from the act of 1916 in three important essentials. First, it applied to additional types of containers. Second, it was applicable to intrastate as well as interstate transactions, whereas the 1916 Act was applicable only to the latter. Third, it required manufacturers to have standard capacity containers approved as to dimensions, by the enforcing agency, whereas the Act of 1916 made no such provision for the standard capacities established therein for berry boxes and till baskets.

**Allied laws and regulations.**—Several additional laws and regulations, not dealing primarily with weights and measures, but referring to that subject, should now be mentioned.

The Federal Food, Drug, and Cosmetic Act of 1938, for example, provides that containers of foods, drugs, or cosmetics must not be so made, formed, or filled as to be misleading, and further provides that such containers must bear labels showing the contents in terms of weight, measure, or numerical count. The Secretary of Agriculture is authorized to establish a standard fill of container for any food.<sup>12</sup> Food for which a standard fill of container has been so prescribed is declared to be misbranded, if the container is below the standard, unless designated as slack-fill. A drug, the name of which is recognized in an official compendium (e. g. the U. S. Pharmacopeia, U. S. Homeopathic Pharmacopeia, or National Formulary), is misbranded unless the package and label conform to specifications set forth in such compendium; the method of packaging, however, may be modified with the consent of the Secretary of Agriculture.<sup>12</sup>

Internal revenue provisions contain some references to weights and measures. In respect to liquor, there is a prohibition against the intentional use of false weights or measures in transactions involving grain, beer, molasses, or other substances to be used for distillation. For flour, a container for a quantity not to exceed 196 pounds is established as standard.

In the laws pertaining to tariffs it is stated that, in calculating duties on imported grain, the number of bushels is to be ascertained

<sup>11</sup> This was one of the functions transferred from the Bureau of Agricultural Economics to the Agricultural Marketing Service, U. S. Department of Agriculture, July 1, 1939.

<sup>12</sup> This responsibility is now vested in the Administrator of the Federal Security Agency. By authority of Reorganization Plan No. IV, issued by the President April 11, 1940, the Food and Drug Administration was transferred, July 1, 1940, from the U. S. Department of Agriculture to the Federal Security Agency.

by weight. The standard bushel of wheat is designated as 60 pounds; of corn or rye, 56 pounds; of barley, 48 pounds; of oats, 32 pounds; of peas, 60 pounds; of buckwheat, 42 pounds. The word "ton" is defined in the tariff provisions as "twenty-hundred-weight, each hundred-weight being 112 pounds avoirdupois." This latter definition apparently has become obsolete since the word "ton" does not at present appear in the tariff provisions.

Standard weights are also frequently mentioned in the monetary laws. Weights are fixed for the various coins of the United States, and the standard troy pound of the National Bureau of Standards is declared to be the standard for the regulation of coinage, replacing the "troy pound of the mint," previously referred to. Also, the President is authorized, under certain limitations, to change the weight of the gold and silver dollar.

In the shipping laws there are several provisions dealing with the weight and measurement of ships, and a requirement that there be kept on board ship, "proper weights and measures for the purpose of determining the quantities of the several provisions and articles served out." Post offices exchanging mails with foreign countries, and such other post offices as may be selected by the Postmaster General, are to be furnished with postal balances denominated in grams of the metric system, 15 grams to be the equivalent of  $\frac{1}{2}$  ounce avoirdupois.

These and some miscellaneous other provisions<sup>13</sup> complete the list of Federal laws which involve standards of weight and measure. The list would be even longer if the attempt were made to indicate provisions calling for pertinent designations on labels. Of more immediate interest for present discussion, however, are the proposals to amend existing standards of weight or measure or to enlarge the jurisdiction of the Government thereon.

### Proposals for Changes

Prominent among proposals for changes are bills seeking to extend the principles of standardization. Recent illustrations were those (H. R. 4402 and H. R. 5530) introduced in the Seventy-sixth Congress, first session, by Representative A. L. Somers.

The first bill (H. R. 4402), similar to one introduced in the preceding Congress by Representative Harry Sauthoff,<sup>14</sup> was designed to establish standards of dimension and capacity for 11 sizes of metal containers for canned fruits and vegetables, and 3 sizes of containers for canned milk.

By the provisions of the second bill (H. R. 5530) the Standard Container Acts of 1916 and 1928, and the Standard Barrel Act of 1915, were to be repealed. The standards specified in these acts were to be reestablished, and additional standards set up for types of fruit and vegetable containers such as drums, cartons, crates, boxes, and

<sup>13</sup> The Secretary of Agriculture may license persons to weigh, and issue certificates as to weight of, any agricultural product stored in a warehouse licensed under the U. S. Warehouse Act. A provision of the Interstate Commerce Act prohibits such false weighing by railroads as would willfully permit the transportation of property at less than applicable established rates. Terms of weight, measure, and money in diplomatic, consular, and commercial reports distributed by the Department of Commerce must be expressed in American as well as foreign units. Leases on Government-owned mining lands must provide rules to insure the "fair and just weighing or measurement" of the coal mined by each miner. With certain exceptions, coal or wood purchased by Federal Government officials in the District of Columbia must be inspected and weighed or measured; this is to assure that the ton of coal be 2,240 pounds, and the cord of wood 128 cubic feet.

<sup>14</sup> H. R. 6964, on which hearings were held in March 1938.

sacks. Containers were to be made in accordance with specifications approved by the Secretary of Agriculture. Fruits and vegetables, packaged or sold by net weight or numerical count, were exempted from the standard capacity requirements under this bill.

Greater uniformity in State laws relating to the bushel weights of numerous commodities was contemplated in a bill (H. R. 150) introduced in the Sixty-fourth Congress, first session, 1916, the hearings on which were published. Standard weights for loaves of bread were sought through a bill (H. R. 4533) of the Sixty-eighth Congress, first session, 1924. Bills for setting up standard weights and measures for flour, meal, and feed have also been introduced from time to time.<sup>15</sup>

Bills designed to grant to the National Bureau of Standards certain regulatory control over weighing and measuring devices throughout the country have been introduced in many sessions of Congress since 1910.

A proposal to legally define American units of weight and measure, in terms of the metric standards in possession of the National Bureau of Standards, was embraced in bills introduced by Representative Somers (H. R. 8974) and the late Senator Royal S. Copeland (S. 3609) in the Seventy-fifth Congress, second session, 1938. Similar bills had been introduced by the same sponsors in the first session of the same Congress, as H. R. 7869 and S. 2789, respectively. The import of the proposal may be ascertained from the following excerpt from testimony by Dr. Lyman J. Briggs, Director of the National Bureau of Standards, at the hearings on H. R. 7869.

It will be evident from the wording of the proposed legislation that it is not in any sense a proposal to use the metric system in place of our customary system of weights and measures. On the contrary it is a proposal to establish legally the standards which define the weights and measures now in use. It uses for this purpose the platinum-iridium meter No. 27 and kilogram No. 20, because they are the best material standards of length and mass which this Government possesses. During the past 40 years neither standard has changed by more than one part in 50,000,000. By defining the inch and the pound as certain specified fractions of the meter and the kilogram, we base our customary system of weights and measures on material standards that have been shown to be highly stable and constant in value. But in so doing we do not for a moment relinquish the units of our customary system of weights and measures. On the contrary, for the first time in the history of our country, their values will be definitely established by this legislation.

Proposals regarding the metric system of weights and measures have often been carried to the extent of urging that the units thereof replace the customary units in use in this country. One bill with that objective (H. R. 10, Sixty-ninth Congress, first session, 1926) received considerable attention, and the hearings published. This bill provided for the use of the metric system in merchandising transactions only, and allowed 10 years time for business men to make the necessary adjustments. A somewhat different objective is exemplified by H. R. 12850, Sixty-sixth Congress, second session, on which hearings were also held. Framed on the assumption that the virtue of the metric system is the exactitude resulting from use of decimals, the bill was designed to decimalize the customary units, not to replace them by the metric. Thus the foot would be retained in use as a basic unit but regraduated into tenths, hundredths, etc.

<sup>15</sup> Additional bills, hearings for which have been published: H. R. 10957, 65th Cong., 2d sess., 1918; H. R. 7482, 66th Cong., 1st sess., 1919; H. R. 4901, 67th Cong., 1st sess., 1921; and H. R. 9040, 70th Cong., 1st sess., 1928.

## Relationship Between Federal and State Laws

Since the Constitution grants to Congress the power to "fix the standard of weights and measures," the effect of this provision on control of the States over weights and measures should be given some consideration. An interpretation of this question was contained in a Federal court decision in 1855,<sup>16</sup> in which it was pointed out that in view of the power delegated to Congress, the validity of State weights and measures laws was doubtful. That view has, however, long since ceased to prevail. According to present thought, " \* \* \* The States may exercise this power in the absence of congressional legislation. Early opinion questioning such authority seems clearly discounted."<sup>17</sup>

The principle that the States can lawfully legislate upon weights and measures, in matters wherein Congress has not chosen to exercise its power, has, in fact, never been seriously challenged. In the several cases involving constitutionality of State weights and measures regulations, which have come before the United States Supreme Court, the argument against constitutionality centered on other constitutional limitations on State power, such as the "due process" and "equal protection" clauses, not on alleged conflict with Federal authority.

By virtue of the "police power" granted to the States the State weights and measures laws have in general been upheld against the challenge of these clauses. In 1909 the United States Supreme Court could look back and mention the State laws that had "been sustained in the courts in the past," including numerous laws "regulating the sizes of loaves of bread when sold in the market; requiring the sale of coal, in quantities of 500 pounds or more, by weight; that milk must be sold in wine measure, and kindred enactments."<sup>18</sup> Later, in sustaining the validity of a Chicago ordinance prescribing standard weights for loaves of bread, the Supreme Court pointed out that "laws and ordinances of the character of the one here under consideration and tending to prevent frauds and requiring honest weights and measures in the sale of articles of general consumption, have long been considered lawful exertions of the police power."<sup>19</sup>

Even when Federal legislation has dealt with a particular subject within the field of weights and measures, State legislation on the same subject has been upheld in the courts, provided the State provisions were consistent with the Federal. The most obvious illustration of "consistency" is a situation where the Federal law applies to interstate commerce only, and the State law to intrastate commerce. But there are other kinds of examples, too. Thus, for instance, although Congress had enacted a law governing standard time, the Supreme Court in 1926 upheld the validity of the Massachusetts daylight-savings-time law, because the Court found nothing therein that was inconsistent with the Federal law.<sup>20</sup>

This same principle was followed in a recent case involving an Oregon law which authorized the setting up of standards for con-

<sup>16</sup> *The Miantinomi*, 17 Fed. Cas. 254 (1855).

<sup>17</sup> *The Constitution of the United States* (Revised annotated edition, 1938) (S. Doc. 232, 74th Cong., 2d sess.), p. 229, Library of Congress, Legislative Reference Service.

<sup>18</sup> *McLean v. State of Arkansas*, 211 U. S. 539 (1909), p. 550.

<sup>19</sup> *Schmidinger v. City of Chicago*, 226 U. S. 578 (1913), p. 588.

<sup>20</sup> *Massachusetts State Grange v. Benton*, 272 U. S. 525 (1926).

tainers of fruits and vegetables. The Supreme Court, in upholding the validity of an administrative order setting up standard dimensions for raspberry and strawberry containers under this law, pointed out, among other things, that the—

standard prescribed by the order does not conflict with any established by Congress. The Standard Baskets and Containers Act of May 21, 1928, \* \* \* has no relation to the matter here under consideration. That statute deals solely with hampers, round-stave, and splint baskets of capacity not less than one-eighth bushel. The Standard Baskets and Containers Act of August 31, 1916 \* \* \* which in sec. 2 deals with containers for small fruits and vegetables, prescribes merely the capacity of the containers. It fixes the cubic contents for dry half-pint, pint, and quart. It makes no reference to the dimensions or form of the container; and has left to the individual states the adoption of the standards in these respects if deemed necessary.<sup>21</sup>

It would seem, therefore, that only in a case of clear conflict, would a State weights and measures provision be regarded as superseded by a Federal weights and measures provision.<sup>22</sup>

## Summary of Federal Laws and Regulations

The following chart (table 1) is intended to be a schematic summarization of the more important Federal laws and regulations, pertaining to weights and measures. Federal statutes which are obsolete and those dealing only incidentally with weights and measures are for the most part omitted.

TABLE 1.—*Summary of Federal laws and regulations relating to weights and measures*

### BARRELS AND BASKETS

Character of legislative enactment, or administrative order	Citation or reference	Date	Pertinent provisions
Standard Barrel Act.	38 Stat. 1186.	1915.....	Establishes the dimensions of the standard barrel for fruits, vegetables, and other dry commodities (not including lime), also the standard barrel for cranberries; barrels of any of these commodities when shipped to any foreign country are in compliance with the act, if so constructed as to meet the particular legal requirements of such country. “* * * reasonable variations shall be permitted and tolerance shall be established by rules and regulations made by the Director of the Bureau of Standards and approved by the Secretary of Commerce.” Specifies that prosecutions for offenses may be initiated on complaint of local sealers of weights and measures, or other officers of the States and Territories, appointed to enforce the laws relating to weights and measures. “* * * nothing in this Act shall apply to barrels used in packing or shipping commodities sold exclusively by weight or numerical count.” Penalty: Fine not to exceed \$500, or imprisonment not to exceed 6 months.

<sup>21</sup> *Pacific States Box and Basket Co. v. White*, 296 U. S. 176 (1935), pp. 182–183.

<sup>22</sup> One source for such conflict is the State weight-per-bushel laws. These might easily conflict, for example, with the Federal Standard Container Act of 1928 insofar as fruits and vegetables packed in baskets standardized by the act are concerned. The Federal Act, it will be recalled, was passed not under the power to regulate interstate commerce but the power to fix weights and measures, hence is applicable both to intrastate and interstate commerce.

TABLE 1.—*Summary of Federal laws and regulations relating to weights and measures—Continued*

Character of legislative enactment, or administrative order	Citation or reference	Date	Pertinent provisions
Standard Lime Barrel Act.	39 Stat. 530.	1916.....	Establishes standard sizes of large and small barrels for lime; specifies character of marking of such barrels when used in interstate or foreign commerce; requires that lime sold in interstate or foreign commerce, in containers of less capacity than the standard small barrel, be sold in fractional parts of standard small barrel, and that containers be marked in accordance with provisions in the act; designates the Director of the Bureau of Standards to make rules and regulations for enforcement with reasonable variations or tolerances, subject to the approval of the Secretary of Commerce. Penalty: Fine not exceeding \$100.
Standard Container Act of 1916.	39 Stat. 673.	1916.....	Designates the 2-quart basket, 4-quart basket, and 12-quart basket, respectively, as standards for climax baskets for grapes and other fruits, and vegetables; fixes the dimensions of standard climax baskets. Establishes standard capacities of containers for small fruits, berries, and vegetables to be the dry ½ pint (16.8 cubic inches), dry pint (33.6 cubic inches), dry quart (67.2 cubic inches), and multiples of the dry quart; requires conformity with the standards when containers are shipped in interstate commerce, but states that shipments to foreign countries are not to be affected by the act. Directs the U. S. Department of Agriculture to examine and test containers, and the Secretary of Agriculture to establish and promulgate necessary rules and regulations, but to allow reasonable tolerances and variations. Penalty for willful violation: Fine in any sum not exceeding \$25.
Standard Container Act of 1928.	45 Stat. 685.	1928.....	Establishes capacities for hampers, round-stave baskets, and splint baskets for fruits and vegetables. Declares it unlawful to manufacture for sale or shipment, to offer for sale, to sell, to offer for shipment, or to ship containers (filled, unfilled, or as unassembled parts) not in compliance with this act. Specifies that no person be prosecuted when he establishes a guaranty, signed by the manufacturer, wholesaler, shipper, or other party, that the containers conform to the provisions set forth in the act. Containers not meeting the requirements may be confiscated after court action. Permits the manufacture for sale or shipment, offering for sale, sale or shipment of hampers, round-stave baskets, splint baskets or parts thereof to any foreign country in accordance with the specifications of a foreign consignee or customer, provided these specifications are not contrary to the law of such foreign country; also permits the manufacture or use of banana hampers of the shape and character now in commercial use as shipping containers for bananas. Directs the Secretary of Agriculture to approve dimensional specifications, and to make rules and regulations for enforcement of the law. Penalty for willful violation: Fine not exceeding \$500.



TABLE 1.—*Summary of Federal laws and regulations relating to weights and measures—Continued*

## BILLS OF LADING

Character of legislative enactment, or administrative order	Citation or reference	Date	Pertinent provisions
Bills of lading issued in interstate and foreign commerce.	39 Stat. 538..	1916.....	Governs bills of lading issued by any common carrier for transportation of goods in interstate and foreign commerce; distinguishes between responsibilities of carrier and shipper, depending on which party loads such goods. If carrier loads goods "Shipper's weight, load, and count," or other words of like purport, in the bill of lading are forbidden. If shipper loads goods, law permits carrier to insert in bill of lading, "Shipper's weight, load, and count," or other words of like purport, in which event the carrier shall not be liable for damages caused by improper loading, non-receipt, or misdescription of the goods; includes details bearing on weighing and measuring equipment, setting forth relations of carrier to shipper in connection therewith.

## COAL

Weighing of coal....	Rev. Stat., sec. 3711.	As amended Mar. 2, 1895, and Mar. 15, 1898. .	Forbids, in the District of Columbia, any officer or person in the civil, military, or naval service of the United States to purchase coal for the public service except on condition that same, before delivery, be inspected and weighed by some person appointed by the head of the department or chief of the branch of the service for which the purchase is made; establishes standard ton of coal as 2,240 pounds; requires that each load of coal weighed be accompanied by the weigher's certificate showing number of tons or pounds.
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## COINS

Standard weights of gold coins.	Rev. Stat., sec. 3511.	1873.....	Establishes weight of the 1-dollar, 2½-dollar, 3-dollar, 5-dollar, 10-dollar, and 20-dollar gold pieces, respectively.
Standard weight of minor coins.	Rev. Stat., sec. 3515.	1873.....	Establishes weight of each of the following minor coins in the United States: 5-cent piece, 3-cent piece, and 1-cent piece.
Deviations from standard weight; gold coins.	Rev. Stat., sec. 3535.	1873.....	Specifies limits of deviations from standard weights of gold coins.
Deviations from standard weight; minor coins.	Rev. Stat., sec. 3537.	1873.....	Specifies limits of deviations from standard weights of minor coins.
Tolerated loss of weight of gold coins.	Rev. Stat., sec. 3505.	1873.....	Sets up limitations and reservations for tolerated loss in weight of gold coins due to abrasion; directs the United States Treasury to receive such coins at their nominal value, under such regulations as the Secretary may prescribe for the protection of the Government against fraudulent abrasion or other practices.

TABLE 1.—Summary of Federal laws and regulations relating to weights and measures—Continued

## COINS—Continued

Character of legislative enactment, or administrative order	Citation or reference	Date	Pertinent provisions
Standard weights of subsidiary silver coins.	Rev. Stat., sec. 3513.	1876.....	Establishes weight of each of the following subsidiary silver coins in the United States: Trade-dollar; half-dollar, or 50-cent piece; quarter-dollar, or 25-cent piece; and dime, or 10-cent piece.
Standard weight of silver dollar.	20 Stat. 25...	1878.....	Directs mints of the United States to coin silver dollars and establishes the weight thereof.
Deviations from standard weight; silver coins.	Rev. Stat., sec. 3536.	As amended Mar. 4, 1911.	Specifies limits of deviations from standard weights of silver coins.
Standard troy pound for use in U. S. Mint.	Rev. Stat., sec. 3548.	Mar. 4, 1911.	"* * * the standard troy pound of the Bureau of Standards of the United States shall be the standard troy pound of the Mint of the United States, conformably to which the coinage shall thereby be regulated."
Standard weight of gold and silver dollar.	48 Stat. 31...	May 12, 1933.	Fixes weight of both the gold and the silver dollar in grains nine-tenths fine; permits unlimited coinage at a ratio fixed by the United States Government or by international agreement. "* * * and such gold dollar, the weight of which is so fixed, shall be the standard unit of value, and all forms of money issued or coined by the United States shall be maintained at a parity with this standard * * *." Directs the Secretary of the Treasury to maintain such parity and states that such weight shall not be reduced by more than 50 percent; authorizes the Secretary of the Treasury, with the approval of the President, to make and promulgate rules and regulations in compliance with this act.

## COSMETICS

Food, Drug, and Cosmetic Act of 1938.	50 Stat. 1040.	1938	Requires that the label bear an accurate statement of the quantity of the contents in terms of weight, measure, or numerical count; that labels are not to be false or misleading in any particular; and that containers are to be so made, formed, or filled as not to be misleading.
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## DRUGS

Use of metric system by U. S. Public Health Service.	U. S. Public Health Service Regulations, par. 516.	Aug. 29, 1920	Regulations approved by the President: "Officers shall, for all official, medical, and pharmaceutical purposes, make use of the metric system of weights and measures."
Use of metric system for prescriptions.	Army Regulations 40-590, par. 17-b.	Aug. 29, 1920	Army regulations: "In time of peace and, so far as practicable, in time of war all prescriptions will be written in the metric system * * *."

TABLE 1.—*Summary of Federal laws and regulations relating to weights and measures—Continued*

## DRUGS—Continued

Character of legislative enactment, or administrative order	Citation or reference	Date	Pertinent provisions
Food, Drug, and Cosmetic Act of 1938.	50 Stat. 1040.	1938.....	Forbids addition to or substitution of any substance reducing the quality or strength of drugs; states that drugs shall not differ in strength, purity, or quality, from that claimed on the label; specifies that labels make known the inclusion of habit-forming drugs, and that when drugs are composed of two or more ingredients, the common names of the active ingredients, and the amounts of such thereof as are listed in the act, shall be shown on the labels; prohibits false or misleading statements on labels; requires that the label bear an accurate statement of the quantity of the contents in terms of weight, measure, or numerical count, and that the containers be so made, formed, or filled as to prevent deception. Directs that drugs recognized in official pharmacopoeias or formulary shall be packaged and labeled in the manner prescribed in such pharmacopoeias; permits drugs so recognized to differ from the strength, purity, or quality designated therein, deviations to be shown on the labels.

## ELECTRICAL MEASURE

Legal units of electrical measure established.	28 Stat. 102..	1894.....	Defines units of electrical measure for resistance (ohm), current (ampere), electromotive force (volt), quantity (coulomb), capacity (farad), work (joule), power (watt), and induction (henry); directs the National Academy of Sciences to prescribe and publish specifications necessary for practical application of definitions of ampere and volt.
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## FOODS

Legal weight of bushel for certain products.	Rev. Stat., sec. 2919.	1866.....	Specifies that in estimating the duties on importations of certain products the number of bushels be ascertained by weight instead of by measure; sets up definite weights per bushel for each of the following products: Wheat, corn, rye, barley, oats, peas, and buckwheat.
Weights to appear on casks of sugar.	Rev. Stat., sec. 2915.	1870.....	Authorizes the Secretary of the Treasury to prescribe regulations whereby the proper officers can take samples from packages of sugar to ascertain the true quality; specifies that weights of sugar, imported in casks or boxes, be distinctly marked by customhouse weighers.

TABLE 1.—*Summary of Federal laws and regulations relating to weights and measures—Continued*

## FOODS—Continued

Character of legislative enactment, or administrative order	Citation or reference	Date	Pertinent provisions
Food, Drug, and Cosmetic Act of 1938.	50 Stat. 1040.	1938.....	Authorizes the Secretary of Agriculture to promote honesty and fair dealings by establishing standards for containers for food, to limit the amounts of added dangerous substances in the manufacture of a food, and to hold public hearings in order to obtain evidence upon which to base necessary regulations. Requires that the label bear an accurate statement of the quantity of the contents in terms of weight, measure, or numerical count; and further requires that if food is composed of 2 or more ingredients, and is not considered "standard" by the Food and Drug Administration, the label show the common name of each ingredient; forbids addition of any substance to a food to increase its bulk or weight, or make it appear of greater than its actual value, and the omission of any substance which is recognized as being a valuable part of a food. Specifies that containers be so made, formed, or filled as not to be deceiving.

## METALS

Standard gage for sheet and plate iron and steel.	27 Stat. 746..	1893.....	Establishes standard gage for sheet and plate iron and steel for use in determining duties and taxes levied; specifies that no standard be set up to increase duties on imported articles; authorizes and requires the Secretary of the Treasury to prepare detailed standards in accordance with the provisions of the act; allows a variation of 2½ percent either way in the practical use and application of the standard gage.
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## PACKERS AND STOCKYARDS

Packers and Stockyards Act, 1921.	42 Stat. 159..	1921.....	Packers and Stockyards Act is not primarily a weights and measures statute but one to regulate marketing of livestock, meats, and poultry in interstate commerce; deals with responsibilities of stockyard owners and market agencies in connection with such marketing. Weighing is a service that must be reasonable and nondeceptive; authorizes the Secretary of Agriculture, after notice and full hearing, to issue an order that the stockyard owner, market agency, or dealer employing unlawful practices in connection with the weighing in commerce at a stockyard, cease and desist from continuing such violation.
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## PRECIOUS STONES

Adoption of international metric carat.	Treasury Department Order No. 33562.	June 17, 1913.	Included in Treasury Department order to collectors and other officers of the customs: " * * * the unit of weight for imported diamonds, pearls, and other precious stones will be the metric carat of 200 milligrams."
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TABLE 1.—Summary of Federal laws and regulations relating to weights and measures—Continued

## PRECIOUS STONES—Continued

Character of legislative enactment, or administrative order	Citation or reference	Date	Pertinent provisions
	Circular No. 43, Bureau of Standards.	Nov. 1, 1913.	"* * * the Bureau of Standards will recognize the international metric carat of 200 milligrams as the unit of weight for diamonds and other precious stones and will use this unit for the purposes of certification of all carat weights submitted to the bureau for test."

## PROOF SPIRITS, FERMENTED LIQUORS, ETC.

Standard gallon to be used in sales.	Rev. Stat., sec. 3250.	1868.....	Specifies that standard gallon be used in all sales of proof spirits throughout the United States.
False weights or measures for certain substances used for distillation.	Rev. Stat., sec. 3306.	1868.....	Prohibits the use of false weights and measures in ascertaining the quantities of grain, meal, or vegetable materials, molasses, beer, or other substances used for distillation. Penalty for violation: A fine of not less than \$500 nor more than \$5,000 and imprisonment for not less than 1 year nor more than 3 years.
Standard of proof spirits.	Rev. Stat., sec. 3249.	1872.....	Specifies that proof spirit be that alcoholic liquor which contains one-half of its volume of alcohol of a specific gravity of seven thousand nine hundred and thirty-nine ten-thousandths (0.7939) at 60° F.
Authorized barrel or proof spirits.	Rev. Stat., sec. 3308.	1872.....	Directs every distiller to make a return of the number of barrels of spirits distilled by him, whenever such return is demanded by the collector of the district.
Standard barrel of fermented liquors.	Rev. Stat., sec. 3339.	1876.....	"* * * a tax of \$1 for every barrel containing not more than 31 gallons; * * * more than 1 barrel, and not more than 63 gallons, shall be accounted 2 barrels, or a hogshead * * *"
Standard gallon for use in internal revenue.	20 Stat. 351.	1879.....	Specifies that the word "gallon" mean a wine gallon when used in the internal revenue law relating to beer, lager beer, ale, porter, and other similar fermented liquors. Fixes standard measure for the wine gallon.

## SCREW THREADS

Screw thread standardization.	40 Stat. 912..	July 18, 1918.	Standardized screw threads; created Commission for the Standardization of Screw Threads; specified that Commission be composed of the Director of the Bureau of Standards (chairman), and 2 representatives of the Army, 2 of the Navy, 4 appointed by the Secretary of Commerce (2 chosen from nominations made by the American Society of Mechanical Engineers, and 2 from nominations made by the Society of Automotive Engineers); and further specified that the Commission ascertain and establish standards for screw threads and submit them to the Secretary of War, Secretary of Navy, and the Secretary of Commerce for their acceptance and approval; required use of standard screw threads for Army and Navy plants; authorized the Secretary of Commerce to promulgate standards for public use and cause them to be published as a public document.
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TABLE 1.—*Summary of Federal laws and regulations relating to weights and measures—Continued*

## SCREW THREADS—Continued

Character of legislative enactment, or administrative order	Citation or reference	Date	Pertinent provisions
Executive order issued under reorganization provisions included in an appropriation act for Treasury and Post Office Departments.	47 Stat. 1517.	June 10, 1933.	The National Screw Thread Commission was abolished in 1933 by Executive Order 6166, issued under authority of Appropriation Act for Treasury and Post Office Departments, passed Mar. 3, 1933, containing provisions for reorganizations within the executive branch of the Government. An Interdepartmental Screw Thread Committee, which carries on many of the former duties of the National Screw Thread Commission, has been established by the Departments of War, Navy, and Commerce. The committee acts in close cooperation with industry through liaison representatives of the American Standards Association. Three groups participate in this cooperative activity: the Sectional Committee on Standardization and Unification of Screw Threads (organized under the procedure of the American Standards Association), and the American Society of Mechanical Engineers and the Society of Automotive Engineers.

## SHIPS, SHIPMASTERS, ETC.

Weights and measures to be kept by merchant shipmasters.	Rev. Stat. sec. 4571.	1872-----	Requires every shipmaster to keep on board proper weights and measures for determining the quantities of the several provisions and articles served out, to be used at the time of serving out such provisions and articles, and, whenever dispute arises to allow the use of such weights or measures in the presence of a witness. Penalty for each offense: Not more than \$50.
Net or register tonnage defined.	Rev. Stat. sec. 4153.	1909-----	Requires that the register tonnage of every vessel built within the United States or owned by a citizen or citizens thereof be the entire cubical capacity in tons of 100 cubic feet each; specifies method for ascertaining register tonnage.

## TIME

Standard time for territorial zones.	40 Stat. 450.	As amended Aug. 20 1919.	Divides continental United States into 5 zones and establishes standard time for the United States; defines, by an order of the Interstate Commerce Commission, limits of each zone; authorizes Interstate Commerce Commission to modify orders from time to time; governs movements of carriers engaged in intrastate, interstate, and foreign commerce; specifies that official acts be regulated by the United States standard time of the zone within which the act is to be performed; designates first zone as United States standard eastern time, second zone as United States standard central time, third zone as United States standard mountain time, fourth zone as United States standard Pacific time, and fifth zone as United States standard Alaska time.
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TABLE 1.—*Summary of Federal laws and regulations relating to weights and measures—Continued*

## WAREHOUSING, AGRICULTURAL PRODUCTS

Character of legislative enactment, or administrative order	Citation or reference	Date	Pertinent provisions
United States Warehouse Act.	39 Stat. 446.	1916..... As amended July 24, 1919, and Feb. 23, 1923.	Authorizes the Secretary of Agriculture to investigate storage, warehousing, classifying, weighing, and certification of agricultural products; to issue licenses to inspectors, samplers, classifiers, and weighers; to sample, inspect, classify, and weigh agricultural products; and to suspend or revoke licenses used for improper purposes.

## WOOD

Measuring of wood	Rev. Stat. sec. 3711.	As amended Mar. 2, 1895, and Mar. 15, 1898.	Forbids, in the District of Columbia, any officer or person in the civil, military, or naval service of the United States to purchase wood for the public service except on condition that same, before delivery, be inspected and measured by some person appointed by the head of the department or chief of the branch of the service for which the purchase is made; establishes standard cords of wood of 128 cubic feet; requires that each load or parcel of wood measured be accompanied by the weigher's certificate of the number of cords of wood in each load or parcel.
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## Origin and Development of Model Law

A movement to promote uniformity in the control of weights and measures in the various States, through the adoption of provisions contained in a model weights and measures law recommended by the National Conference on Weights and Measures, began to develop after a compilation of weights and measures laws was published by the National Bureau of Standards in 1904.<sup>23</sup> In reference to that compilation Ralph W. Smith quotes in *Weights and Measures Administration* (p. 237), the comment of an official of the National Bureau of Standards as follows: “\* \* \* the laws of the States on the subject of weights and measures were antiquated, weak, and contradictory in their provisions and, moreover, independent investigation proved that in very few States was an attempt being made to enforce such requirements as they contained. It was recommended that new and strict statutes were absolutely necessary in every State if faulty weights, measures, and apparatus were to be eliminated from commercial use, and if delivery of short amounts of commodities was to be prevented.”<sup>24</sup>

<sup>23</sup> Revisions were published in 1912 and 1926, the latest laws being included. See *Federal and State Laws Relating to Weights and Measures*, National Bureau of Standards Miscellaneous Publication No. 20, 1926.

<sup>24</sup> SMITH, RALPH W., *Weights and Measure Administration*, Handbook Series of the National Bureau of Standards, No. 11, p. 6, 1927.

In 1905, the year following the initial compilation of the laws, the first National Conference on Weights and Measures, attended by 11 State officials, was held in Washington, D. C. A resolution was passed, requesting the National Bureau of Standards to call a meeting “\* \* \* to discuss and facilitate both National and State legislation tending toward securing uniformity in laws pertaining to weights and measures and their inspection throughout the United States \* \* \*”

Uniformity of the laws was accordingly a leading topic of consideration at the second conference, held in 1906. A resolution was passed, instructing the executive committee “to draw up a model set of laws to be submitted to this body at its next meeting.” Pursuant to this resolution a set of 34 suggestions was prepared by the committee. As the outgrowth of these suggestions, and of certain amendments thereto, a model law was presented by the National Bureau of Standards in 1911 at the sixth conference. Approval was given by the conference. This law was then recommended for adoption by the States.

In the current version the model law is presented in three forms, having essentially identical primary features. Differences in details are necessary to enable adaptations to particular jurisdictional conditions. Form No. 1 is intended for use in States of small population per unit of area, where the entire weights and measures inspection system is in charge of State departments. Form No. 2 is designed for conditions where, in thinly inhabited sections, control can be most practicably exercised by the State, and in sections of concentrated population, by local authorities. Form No. 3 is recommended for thickly populated States where the legislators are of the opinion that testing should be done by local officials under the general supervision of State departments of weights and measures.

Each of the three present forms of the model law is intended to be suitable for State statutes. However, the basic provisions can be easily modified to meet the special requirements of city ordinances. Consumer groups should find the model law valuable for checking the adequacy of their local and State weights and measures laws.<sup>25</sup> The language is legalistic but little difficulty is likely to be encountered in drawing essential comparisons.

## Inquiry by Federal Trade Commission

An important study bearing on consumer interest in weights and measures was reported in 1933 by the Federal Trade Commission. As the result of congressional action in 1928 (S. Res. No. 224), a responsibility placed on the Commission was that of inquiring into “the advantages or disadvantages of chain store distribution in comparison with those of other types of distribution.” In carrying out this mandate, considerable attention was given to the question of short

<sup>25</sup> See Essentials of Model Law, appendix A, pp. 70 to 72, inclusive. The complete text, together with a brief history of its development, is given in *Weights and Measures Administration* (Handbook Series of the National Bureau of Standards, No. 11, 1927). Copies of *The Model State Law on Weights and Measures* (including amendments adopted in 1936 and 1940). Letter Circular, L C 620, can be obtained without charge from the Weights and Measures Division, National Bureau of Standards, Washington, D. C.



weighing and overweighing. Five bulk commodities (navy beans, dried prunes, Lima beans, light-weight sweetened crackers, and sugar) were bought at chain stores and independent stores in four widely separated cities, each having a population of more than 100,000. The purchases (6,640 in all) were made at 1,691 establishments.

From the data published in the Commission's report,<sup>26</sup> short weight appears to have been found in connection with 48.9 percent of the total number of purchases, overweight in 39.5 percent, and correct weight in 11.6 percent. Short weight was in slightly greater evidence for purchases at chain stores than at independent and cooperative chain stores combined (50.3 percent as compared with 47.8 percent). Overweight was discovered to a smaller extent at the chain stores (34.1 percent against 43.8 percent). In the matter of "exact weights," in contrast, the proportion for chain stores was considerably the greater (15.6 percent, 8.4 percent).

In reference to quantities bought, as distinguished from number of purchases, for chain stores a net short weight (difference between total short weight and total overweight) was discovered to the extent of about three-tenths of 1 percent (0.321) of the total for all five commodities. For independent and cooperative chain stores combined, there was a corresponding overweight of 0.096 of 1 percent of the total.

Short weight and overweight varied between the commodities. The following statement is extracted from the Chairman's letter of submittal (p. XII of the report):

In actual net weight each type of distributor gave net overages on prune and Lima bean purchases and net short weights on sweetened crackers. On navy beans the chains gave a net short weight and the other type of distributors a net overweight, the reverse being true on sugar where the chains had a slight net overage and the other types of distributors were net short. Except in the case of sugar where the chains had a slight overage, the overweights given by the chains were less and shortages greater than was true of cooperative and independent distributors combined. The general and comparatively high shortages on sweetened crackers are possibly explained in part by the fact that this was relatively the most expensive article purchased in the various stores and also the one which was perhaps at the same time the least susceptible of accurate weighing.

Consumers fared less fortunately in buying commodities weighed and packaged prior to sale than at time of sale. (The preweighed were mostly navy beans, Lima beans, and sugar; dried prunes and crackers were ordinarily not packaged in advance.) For preweighed, a net short weight of 0.719 of 1 percent was found at chain stores and 1.005 percent at independent and cooperative chain combined. For nonpreweighed, on the other hand, short weight of 0.200 of 1 percent for chain-store purchases, and overweight of 0.210 of 1 percent for independent and cooperative chain resulted in an aggregate overweight of 0.043 of 1 percent.

No specific conclusions were stated as to whether on preweighed bulk articles of food short weight and overweight would balance each other over an extended period of buying. However, the reported data hardly suggested such equalization.

<sup>26</sup> *Chain Stores: Short Weighing and Overweighing in Chain and Independent Grocery Stores* (S. Doc. 153, 72d Cong.), 1933.

## PART II. SURVEY BY CONSUMERS' COUNSEL DIVISION

### Description of Survey

The facts and figures presented in the remaining sections of this report largely result from action taken in June 1937 by the National Conference on Weights and Measures, in session at the National Bureau of Standards. As a means of obtaining information whereby consumers might become better informed on the existing weights and measures laws and administrative organizations, a national survey was proposed.<sup>27</sup> A resolution was adopted offering cooperation of the Conference members if the Consumers' Counsel Division (U. S. Department of Agriculture) would assume the responsibility for such a survey.

In March 1938, schedules were accordingly sent out by the Consumers' Counsel Division to 338 officials whose names were entered on the mailing list of the Division of Weights and Measures, National Bureau of Standards.<sup>28</sup> In addition, schedules were mailed to the proper official at each of 35 cities, ranging in population from 30,000 to 458,000. To assure that the reported information was as complete as possible, correspondence was later exchanged with many of the respondents.

Two types of schedules were used in the survey.<sup>29</sup> The first provided for determination of the differences between local weights and measures laws and the model law recommended by the National Conference on Weights and Measures. Officials were asked to indicate whether or not the relevant laws or ordinances of their jurisdictions<sup>30</sup> were in agreement with a checklist of 24 items, covering the main features of the model law. The second was designed to obtain information on the administration of weights and measures departments or bureaus, with special reference to staffs, financial support, testing activities, supervisory activities, and prosecutions.

Approximately one-fourth of the officials, to whom the inquiry was addressed, furnished information concerning their weights and measures laws. Less than one-half gave the requisite administrative data. In the case of schedule 1, the response was less favorable because both city and county officials were asked not to answer the questions thereon, if in their jurisdictions weights and measures were supervised

<sup>27</sup> See copy of address *The Consumer Interest in Adequate Weights and Measures Supervision*, by D. E. MONTGOMERY, in *Report of the Twenty-Seventh National Conference on Weights and Measures*, National Bureau of Standards Miscellaneous Publication M159, pp. 16-21, 1937.

<sup>28</sup> The mailing list of the National Bureau of Standards contained the names of 40 State, 145 county, and 153 city weights and measures officials. This list did not include the names of officials in very small jurisdictions. In general, the services of a well-paid, full-time inspector cannot be afforded by cities of less than 25,000, and counties of less than 20,000 population. In some States the law requires every municipality to maintain an agency for the inspection and control of weights and measures. Sealers in small towns, however, ordinarily devote but part time to that duty.

<sup>29</sup> Copies of the schedules may be found on pp. 73 to 75 inclusive.

<sup>30</sup> In the discussions of the survey material, and in the tables bearing thereon, the term "jurisdictions" refers to States, cities, and counties, separately or collectively.

by virtue of State law. The number of schedules of each type sent out, and the number returned, are given in table 2.

As a supplementary survey activity, comments on the adequacy of the weights and measures services were secured through correspondence with the proper State authorities. The exact designation of the agency administratively responsible, title of the official in charge, and number of subordinates were also determined. To insure an effective approach to the discussions of the material furnished on schedules 1 and 2 all this information is reported in the next two sections.

TABLE 2.—Number of schedules of each type sent out, and number returned, by class of jurisdiction

Jurisdiction	Number of officials receiving schedules	Number of schedules returned, pertaining to—		Proportion of schedules returned, pertaining to—	
		Laws	Administration	Laws	Administration
State.....	40	22	22	<i>Percent</i> 55.0	<i>Percent</i> 55.0
City.....	188	149	279	26.1	42.0
County.....	145	220	466	13.8	45.5
Total.....	373	91	167		
Average.....				24.4	44.8

<sup>1</sup> Includes 36 cities located in 12 of the 22 States accounted for, and 13 cities in 7 additional States.  
<sup>2</sup> Includes 59 cities in 13 of the 22 States, and 20 cities in 10 additional States.  
<sup>3</sup> Includes 17 counties in 6 of the 22 States, and 3 counties in 3 additional States.  
<sup>4</sup> Includes 61 counties in 6 of the 22 States, and 5 counties in 3 additional States.

### Comments by State Officials

Letters from State weights and measures officials regarding the administrative authority of their departments or bureaus stressed the importance of comprehensive weights and measures laws, adequate budgetary funds and inspectors, and a suitable supply of accurate testing equipment. A number of comments of a general nature were also received.

**State laws.**—Lack of a comprehensive statute was repeatedly mentioned as a primary hindrance to an effective weights and measures program. One official, director of the Oklahoma State bureau of Standards, who was also a member of the faculty of the University of Oklahoma, wrote: "You may say that the pertinent laws of this State are antiquated and inadequate, and do not furnish a proper basis for effective enforcement. This is due to a lack of interest in the problem and to some opposition."

In reference to a Maryland statute enabling the department of markets to check scales used in the vending of agricultural commodities, the director stated, "I do not believe it was the intent of this law that the activities of this department cover retail purchasing. My understanding is that the purpose was to provide for the inspection of large-capacity scales at country points, used in the purchase and sale of livestock, hay, grain, and products of that character."

In Mississippi the General Code contains a few provisions pertaining to weights and measures. The secretary of state commented, however, that these provisions were not being enforced, since "the legislature has made no provision or appropriation to that end."

In several States where no general weights and measures statutes were in effect, provisions of special laws protected consumers against the incorrect weighing or measuring of particular commodities. Such provisions were contained in the Florida Gasoline Inspection Law and the Florida Food and Drug Act, and in Colorado, Georgia, and New Mexico enactments regulating sales of various petroleum products, including gasoline.

**Appropriations.**—Inadequate appropriations were frequently reported to be a hindrance to the proper operation of State weights and measures departments.

The appropriation in Vermont, amounting to \$10,000, was described as entirely too small, an additional \$5,000 being needed. A New Jersey official wrote that the State department of weights and measures was "finding difficulty in obtaining the funds to meet the demands placed on the department by legislative enactments." Operating on a budget of \$59,450, an increase to \$98,000 had been requested of the legislature.

In reference to the budgetary allowance in North Carolina the superintendent of weights and measures stated: "I am still hoping that the legislature will see fit to double our appropriations so that we can cover the State at least once a year." He advised that under existing circumstances inspections throughout the State were made only once every 2 years.

Commenting on the situation in the State of Washington, the supervisor of weights and measures wrote: "In my opinion the budgets for the State departments and all city departments are inadequate." He reported the need of larger staffs in Tacoma, Seattle, and Spokane, and added: "It is impossible to get over the rest of the large area in this State as we should."

An official in an Eastern State wrote that from his observation budgetary difficulties were common to most State weights and measures departments. A sealer in a Western State commented: "We are doing all that is justified under existing economic conditions." Another sealer declared that in his State "the legislature has attempted to economize by cutting the appropriations for departments without any very great extensive study as to the relative importance of their activities." The director in still another State wrote as follows: "Weights and measures work in itself is so vital to the economic interests of all the people that it is hard to understand why difficulties should be encountered in the acquisition of sufficient funds, personnel, and equipment to carry on an activity that means so much in dollars and cents to our citizens."

**Personnel.**—Insufficient personnel was the complaint of several directors whose departments exercised State-wide authority. Particularly small staffs were reported in Wyoming, Idaho, Vermont, and Montana.

The need for larger staffs was also expressed in letters relating to States in which weights and measures programs were under both State

and local auspices. The comments of officials in Washington, North Dakota, and New Jersey referred to small number of inspectors as restricting the scope of the services rendered.

As a matter of incidental interest, in New York City, supervision of weights and measures presented a marked contrast to the foregoing conditions. The municipal government was employing 75 full-time inspectors, more than the combined total for Arizona, Arkansas, Delaware, Georgia, Idaho, Kentucky, Louisiana, Mississippi, Montana, Nevada, New Mexico, North Dakota, Oklahoma, South Dakota, Utah, Vermont, and Wyoming. According to the census of 1940, the population of these States was approximately two and one-half times that of New York City.

**Equipment.**—The need of equipment for testing large-capacity scales, and tanks and meters used in selling liquid fuel, was stressed in the letters received. Comments from North Carolina, Wisconsin, North Dakota, Utah, and the District of Columbia placed emphasis on lack of apparatus for checking such scales when maximum or near-maximum loads are weighed. Inadequate equipment for testing large meters and tank trucks was reported from Indiana and South Carolina.

**Local programs.**—The opinions of State sealers in regard to local enforcement of weights and measures laws were sometimes unfavorable. In some cases it was stated that under existing laws the State bureaus could exercise little control over the activities of local officials, and were therefore unable to effect improvements in policies or methods. An official of one State wrote: "To be perfectly frank with you, even the cities and counties which have appointed sealers of weights and measures would actually come under the class of little or no supervision, except in a very few instances. Budgets are in most cases inadequate and personnel improperly trained."

One State sealer reported that local sealers had been appointed in only one-third of the cities, though legal authority existed in all. Commenting further on the supervision of weights and measures in his State, this sealer wrote: "There are perhaps three or four cities in the State which are making an honest effort to enforce the weights and measures law in their jurisdictions, while the remaining cities are doing little or nothing toward enforcement." Another sealer, discussing the work of part-time local sealers, said: "We find their work poorly done and of very little value to the department."

Letters regarding local weights and measures bureaus disclosed that in several States many officials who were responsible for other activities devoted a share of their time to weights and measures services. In Mississippi, inspectors of provisions were charged with certain weights and measures duties, while clerks of courts (county and city) were, *ex officio*, keepers of the standards. In Kansas and Missouri, county clerks could be appointed to act as sealers. In Arkansas, county clerks were required to "seal such weights and measures presented as conformed to the county standards," and constables of townships and marshals of cities and towns were required to make annual inspections of weights and measures. In New Mexico, sheriffs were, *ex officio*, public weighmasters and could appoint deputies.

Prevailing opinion of the respondents was that in view of the importance of weights and measures programs, and the technical skill

required of the personnel engaged therein, it was unwise from an administrative standpoint for sealers to be occupied part time with other duties.

## Administrative Organizations, By States

Weights and measures services are described in the present section, State by State.<sup>31</sup> Titles of officials in charge, number of subordinates, and collateral details are given in summary form in table 3, pages 37 to 40.

The assembled facts show that:

1. Supervision of weights and measures was exclusively under State auspices in nine States.<sup>32</sup>

2. The responsibility for weights and measures regulation was divided between State and local authorities in 29 States; in some instances the State bureau exercised general control over the programs of local bureaus, in other instances very little.

3. No general State weights and measures programs had been inaugurated in six States;<sup>33</sup> moreover, in several, local programs as well were practically nonexistent.

4. Specialized laws regulating the sale of petroleum products, affording consumers some protection against improper weighing and measuring, were in effect in four of the States in which there were no general State programs.<sup>34</sup>

*Alabama*—Chief, division of weights and measures, department of agriculture and industries, Montgomery.

The commissioner of agriculture and industries is granted full authority over all matters pertaining to weights and measures within the State. The division of weights and measures, employing 11 State inspectors, receives its support, not from the general fund, but from a fund created through a fertilizer tax and gasoline and kerosene inspection fees.

Any city or county may appoint a sealer of weights and measures and may also set a fee for inspection work done by local appointees, provided that the commissioner deems such a fee consistent with the services rendered. The only cities having local weights and measures supervision are Birmingham, with three inspectors, and Mobile, with one inspector.

*Arizona*—State inspector of weights and measures, department of weights and measures, Phoenix.

The State inspector of weights and measures, appointed by the Governor, exercises supervision in all parts of the State, except in cities having local sealers. There are no deputy State inspectors. Financial support is by fees.

Sealers must be appointed in cities of more than 5,000 population. There are eight such cities. In one the sealer is employed full time,

<sup>31</sup> The information presented herein is based on special correspondence with the proper State weights and measures officials.

<sup>32</sup> Idaho, Minnesota, Montana, Nevada, North Dakota, South Carolina, South Dakota, Vermont, and Wyoming.

<sup>33</sup> Arkansas, Delaware, Maryland, Mississippi, Missouri, and Oklahoma.

<sup>34</sup> Colorado, Florida, Georgia, and New Mexico. (Additional protection is given to Florida consumers under certain regulations of the State Food and Drug Act.)

in another half time, and in each of the other six only a few weeks a year (average, 4 weeks).

*Arkansas*—There is no general weights and measures supervision by the State. The secretary of state (Little Rock) is legally the custodian of the relevant State standards.

Copies of the State standards must be procured by the county governments, and county clerks must "seal all weights and measures that may be presented to them for that purpose which correspond with the county standard." Constables of townships and marshals of cities and towns are required to make annual inspections of weights and measures.

*California*—Chief, division of weights and measures, department of agriculture, Sacramento.

The division of weights and measures is vested with rather broad authority by virtue of the following inspection laws: Weights and measures, net containers, public weighmaster, bread, hay baling, gas and oil specifications, crude oil and gasoline. The chief of the division may appoint deputy State inspectors of weights and measures for counties of certain classes, and may prescribe regulations governing the examination of candidates for the position of county sealer. Sealers are granted the powers of peace officers. They must inspect all weighing and measuring devices in their jurisdictions at least once a year and transmit annual reports to the State division of weights and measures.

Inspectional services are rendered in all 58 counties. Altogether, 23 State officials and 146 county officials are engaged in the program.

*Colorado*—The State inspector of oils is responsible for the testing of mechanical devices used in the selling of oil or gasoline. Four inspectors are engaged in this work. Weights and measures supervision otherwise is confined to Denver and Pueblo; one inspector is employed in each of these cities. The State treasurer (Denver) is by law custodian of the State standards.

*Connecticut*—State inspector of weights and measures, division of weights and measures, State police department, Hartford.

The superintendent of State police is, ex officio, commissioner of weights and measures. As commissioner he is in complete charge of all weights and measures activities in the State, establishing necessary rules and regulations for counties, cities, and towns. Operating under the supervision of the commissioner is an inspector, member of the division of weights and measures, to whom five State policemen are assigned as assistants.

County, city, and town sealers, respectively, are granted local authority corresponding to that of the division of weights and measures for the State as a whole. A sealer is employed full time in each of 8 counties, 12 cities, and 9 towns. For cities of 25,000 population or more the services of at least 1 weights and measures official, working full time, are required.

*Delaware*—There is no active State weights and measures program.

In 1927 a bill providing for comprehensive, State-wide supervision was presented to the legislature but failed to pass. The State chemist (Dover) is legally the custodian of the State standards of weight and measure.

Three regulators of weights and measures, one for each county, are appointed by the Governor. The county regulators are engaged only part time in official duty; they have no assistants.

*District of Columbia*—Superintendent of weights, measures, and markets, department of weights, measures, and markets.

The department of weights, measures, and markets has charge of the administration of all matters pertaining to weights and measures in the District of Columbia, except the inspection of equipment owned by the Federal Government. One chief inspector, 10 inspectors, and 6 junior inspectors are employed.

*Florida*—Inspection of gasoline and kerosene dispensing devices is in charge of the commissioner of agriculture. Eighteen department of agriculture inspectors, under the direction of the supervising inspector, State oil laboratory, spend approximately one-half time on this work. In addition, a few other inspectors check the weight of packages of merchandise, by authority of the State Food and Drug Act.

A local sealer is employed in each of three cities, and three inspectors in a fourth city.

*Georgia*—There is no general State program of supervision of weights and measures. However, under the direction of the State oil chemist, oil inspection division (department of revenue), eight inspectors test dispensing devices used in the sale of petroleum products.

There are local programs of inspection in only one city and one county.

*Idaho*—Director, bureau of weights and measures, department of agriculture, Boise.

Supervision of weights and measures throughout the State is the responsibility of the bureau of weights and measures, department of agriculture; this bureau has custody of State and public standards of weight and measure, and is charged with the enforcement of the relevant laws. Three State inspectors are employed.

No municipal weights and measures bureaus have been established.

*Illinois*—Superintendent of standards, division of standards, department of agriculture, Springfield.

Weights and measures services are in immediate charge of the superintendent of standards who is responsible to the director of agriculture; the staff consists of 12 inspectors and 8 investigators.



A State law specifies that weights and measures inspectors be appointed in cities having a population of 25,000 or more. Fifty-eight inspectors were reported employed in 16 of 24 such cities. Jurisdiction of State and city inspectors is concurrent.

*Indiana*—Chief, bureau of weights and measures, department of commerce and industry, State board of health, Indianapolis.

The food and drug commissioner is, *ex officio*, commissioner of weights and measures. State-wide supervision is delegated to the chief of the bureau of weights and measures. Three inspectors are employed.

With certain exceptions, counties of at least 30,000 population and cities designated as first, second, or third class are required to appoint inspectors of weights and measures. A total of 33 inspectors was reported for 15 counties and 12 cities.

*Iowa*—State sealer of weights and measures, department of agriculture, Des Moines. (Standards.)

Chief inspector, division of dairy and food, department of agriculture, Des Moines. (Inspection.)

The secretary of agriculture is the principal weights and measures officer. Responsible to the secretary are the State sealer, who has custody of the standards, and the chief inspector of the division of dairy and food, who supervises the field program on which 20 members of the department of agriculture staff are engaged part time. Four additional inspectors devote full time to testing large-capacity scales.

Although legal authority exists for the appointment of sealers in cities and towns, this has been done in only a few.

*Kansas*—Deputy State sealer of weights and measures, University of Kansas, Lawrence. (Standards.)

Secretary, State board of health, Topeka; commissioner of revenue and taxation, Topeka. (Inspection.)

The chancellor of the University of Kansas is, *ex officio*, State sealer of weights and measures. Authority to test small-capacity scales is vested in the State board of health, while food and drug inspectors are empowered to act as inspectors of weights and measures used in trade. Jurisdiction over liquid measuring devices is exercised by the commissioner of revenue and taxation. The secretary of the State horticultural society is authorized to test and prescribe tolerances for standard containers for farm products.

County clerks are, *ex officio*, sealers of weights and measures, but little official time is devoted to the testing of apparatus. Although legal authority exists for appointing sealers in cities, this has been done in only a few instances.

*Kentucky*—Director, division of weights and measures, department of agriculture, Frankfort.

There is no general State program of inspection for all commodities. The department of agriculture exercises supervision over weighing or measuring devices in stockyards and tobacco warehouses; twelve

field men spend less than half-time in this activity. Standard bushel weights of certain agricultural products are fixed by law.

Local weights and measures supervisory services may be inaugurated in cities designated as being in classes 1 to 4, inclusive; in other cities, and in towns, public weighers may be appointed. Inspections are made under local auspices only to a very limited extent.

*Louisiana*—State commissioner of weights and measures, department of agriculture and immigration, Baton Rouge.

On July 6, 1938, a new State weights and measures law received final approval. However, the State legislature at that time made no appropriation for weights and measures services. Previous to the passage of this law, local supervision was confined to the city of New Orleans.

*Maine*—Deputy State sealer, bureau of weights and measures, department of agriculture, Augusta.

The commissioner of agriculture is, ex officio, State sealer of weights and measures. A deputy State sealer is in immediate charge of the bureau of weights and measures, which is vested with regulatory authority for the entire State. There are 3 State inspectors (one full-time and 2 part-time).

Every city and town is required to appoint a sealer of weights and measures. A State law permits small communities to join together in employing the services of a full-time sealer. A total of 255 local sealers was reported for 464 jurisdictions.

*Maryland*—There is no general weights and measures program under State auspices. The only local jurisdiction carrying on a broad, active program of weights and measures inspection is that of the city of Baltimore, which has 9 inspectors. Each county is required by law to appoint a keeper of the standards of weight and measure, but most of these are only part-time employees.

The State department of markets, by direction of the board of agriculture, may test large-capacity scales used in the vending of agricultural commodities.

*Massachusetts*—Director of standards and necessities of life, division of standards, department of labor and industries, Boston.

The division of standards is authorized to enforce weights and measures laws and to approve or disapprove all types of weighing and measuring devices. It exercises supervision over city and town sealers, and is responsible for the certification of licensed hawkers and peddlers. The work of the division is done by 8 inspectors; 6 in the field, 2 in the laboratory.

Every city and town is required by law to appoint a sealer. In cities of at least 10,000 population, appointees are on a civil-service basis. A total of 386 inspectors was reported for 312 towns and 39 cities.

Of special interest to consumers is the fact that at present the director of standards is also director of the division on the neces-

saries of life. In this latter capacity he has broad powers to investigate conditions affecting the prices of commodities which are considered "necessaries of life," including prices of fuel and refined petroleum products. In an emergency he has power to act as food and fuel administrator. Further, he has authority to investigate rents charged for property used for dwelling purposes.

*Michigan*—Chief, division of weights and measures, bureau of foods and standards, department of agriculture, Lansing.

The commissioner of agriculture is vested with supervisory authority for the State. In immediate charge of activities is the chief of the division of weights and measures. Three State inspectors are employed.

Any county or incorporated city may appoint a local sealer of weights and measures. Such officials are employed in 10 counties and 26 cities.

*Minnesota*—Supervisor, department of weights and measures, railroad and warehouse commission, Minneapolis.

The department of weights and measures, with a staff of 16 inspectors, is vested with general supervisory responsibility. No provision is made for inspections by local officials.

*Mississippi*—No general weights and measures program is carried on under State auspices. Copies of the State standards are required by law to be deposited with the secretary of state (Jackson) and at the offices of State educational institutions. Both the secretary of state and the proctors of these institutions are authorized to test and seal weights and measures when so requested.

The inspector of provisions of a county or city is, ex officio, keeper of the standards of weight and measure. The clerk of a county circuit court or the clerk of a city court is, ex officio, keeper of the standards, if no inspector has been appointed. Little or no active weights and measures supervision is rendered under local auspices.

*Missouri*—There is no general State program of weights and measures supervision.

Weights and measures bureaus may be established in cities designated as first, second, or third class. Reports of active inspectional programs were received from 2 cities and 3 smaller communities with a total of 19 inspectors. County clerks may be appointed as weights and measures officials.

*Montana*—Chief deputy sealer of weights and measures, division of grain standards and marketing, weights and measures; department of agriculture, labor and industry; Helena.

The commissioner of agriculture is, ex officio, the State sealer of weights and measures. The chief deputy sealer is in immediate charge of supervisory work. The State has exclusive control over weights and measures activities, which are supported by a fee system. There are three full-time inspectors; one field man of the

grain department staff spends approximately one-third time checking on packaged goods. There are no local sealers.

*Nebraska*—Chief, bureau of foods, drugs, dairies, and weights and measures, department of agriculture and inspection, Lincoln.

The department of agriculture is granted full authority to exercise weights and measures supervision throughout the State. Seven inspectors are employed.

Local sealers may be appointed in cities, but only Omaha has such an official.

*Nevada*—State sealer of weights and measures, department of weights and measures, Reno.

The State sealer of weights and measures is appointed by the board of regents, University of Nevada. This official is charged with the supervision of weights and measures throughout the State. There are four State deputy sealers, no local sealers.

The net weight of packaged food products is checked by the food and drugs inspection service. The sale of petroleum products is under the supervision of the petroleum products inspection service.

*New Hampshire*—Commissioner of weights and measures, department of weights and measures, Concord.

The commissioner of weights and measures supervises the State weights and measures program. Four State inspectors are employed.

Sealers must be appointed in cities of at least 10,000 population. Such sealers (two full-time, seven part-time) are employed in nine jurisdictions. These officials are granted authority in their cities corresponding to that exercised by State inspectors.

*New Jersey*—State superintendent of weights and measures, department of weights and measures, Trenton.

The State superintendent of weights and measures, appointed by the Governor, has general supervision over all weights and measures matters in the State. The department of weights and measures is comprised of the State superintendent, one assistant superintendent and secretary (functioning as deputy), three assistant superintendents, one chief inspector, eight inspectors, and five clerks.

Local superintendents of weights and measures must be appointed in counties and municipalities of at least 60,000 population. Such officers may also be appointed in smaller cities and towns. Altogether 21 counties and 19 municipalities reported a total of 74 local inspectors.

*New Mexico*—There is no active general State supervision of weights and measures. The secretary of state (Santa Fe) is legally the custodian of the State standards. Dispensing devices used in selling petroleum products are inspected by the motor fuel tax division, bureau of revenue.

Sheriffs are, *ex officio*, public weighmasters, and may appoint deputies.

*New York*—Director, bureau of weights and measures, department of agriculture and markets, Albany.

The State bureau of weights and measures has general supervision throughout the State, and has five staff members.

Sealers must be appointed in counties and cities. A total of 210 such officials was reported for 57 counties and 59 cities.

*North Carolina*—Superintendent of weights and measures, department of agriculture, Raleigh.

The weights and measures law is administered by the department of agriculture; the commissioner of agriculture appoints a superintendent of weights and measures, who is granted broad supervisory powers. Under his direction five inspectors are employed on general supervisory activities.

In view of a North Carolina law providing for three grades of gasoline, a label showing the particular grade must appear on each pump. The gasoline and oil inspection division is the designated State regulatory agency; the field staff consists of 30 inspectors.

Although legal authority exists for the appointment of sealers in towns and counties, this has been done in only two jurisdictions, one town and one county.

*North Dakota*—Chief, scale inspection department, public service commission, Bismarek.

The scale inspection department, public service commission, is custodian of the State standards and exercises exclusive control of all weights and measures matters. A chief inspector is in charge of the office and four inspectors. There are no county or city sealers.

*Ohio*—Chief, division of foods and dairies, department of agriculture, Columbus.

The director of agriculture is, *ex officio*, the State sealer of weights and measures. Inspectional services are in charge of a chief sealer and a deputy State sealer, who are members of the staff of the division of foods and dairies.

County auditors are, *ex officio*, sealers of weights and measures. There is a deputy sealer in each of the 88 counties; and local sealers, together with a total of 40 assistants were reported for 19 cities. Many of the appointed county officials spend only part time on weights and measures work.

*Oklahoma*—Director, State bureau of standards, Norman.

There is no general weights and measures service under State auspices. The State bureau of standards consists of a director and two other members, all from the faculty of the University of Oklahoma. The director has been deputizing a fourth member of the university faculty to perform, at nominal cost, certain services relating to the calibrating of a few limited types of equipment. Certain authority is also granted the State board of agriculture with respect to the weighing and measuring of farm and mill products.

Each county is required to have a public weigher whose scales must be tested by the sheriff. Cities designated as first class may prescribe

rules for weighing and measuring any commodity. A local sealer was reported for one city.

*Oregon*—Deputy State sealer of weights and measures, division of market enforcement, department of agriculture, Salem.

The director of agriculture is, ex officio, State sealer of weights and measures. A deputy State sealer is in direct charge of inspectional services. Approximately 20 percent of the official time of 17 general inspectors of the department of agriculture is devoted to weights and measures duties.

Portland is the only city in which a local sealer is employed.

*Pennsylvania*—Director of standard weights and measures, department of internal affairs, Harrisburg.

The bureau of standard weights and measures has broad powers of supervision throughout the State, including authority to approve or disapprove types of equipment. Assigned to this work are 19 State inspectors.

Counties and cities designated as first, second, or third class are required to appoint local inspectors of weights and measures. A total of 76 was reported for counties, and 34 for cities.

*Rhode Island*—Sealer of weights and measures, division of weights and measures, department of labor, Providence.

The State sealer, appointed by the director of labor, exercises supervision over all matters pertaining to weights and measures. There are 39 local sealers in cities and towns.

*South Carolina*—Commissioner, department of agriculture, commerce, and industries, Columbia.

The commissioner of agriculture, commerce, and industries is granted full authority in all matters pertaining to weights and measures. There are 11 staff members but they have other inspectional duties besides weights and measures. No provision has been made for the appointment of local sealers.

*South Dakota*—Director, division of inspections, department of agriculture, Pierre.

The secretary of agriculture is the principal weights and measures officer. Inspectional activities of the department of agriculture, including those relating to weights and measures supervision, are delegated to the division of inspection. One State staff member devotes full time to weights and measures work; part-time assistance is given by two dairy inspectors, two liquor inspectors, and seven food and drug inspectors. Heavy scales (2,000 pounds or over) are under the supervision of the public utilities commission. No provision is made for local weights and measures officers.

*Tennessee*—State sealer of weights and measures, University of Tennessee, Knoxville. (Standards.)

Superintendent of weights and measures, division of foods, fertilizers, and dairies; department of agriculture, Nashville. (Inspection.)

The president of the University of Tennessee, designated by law as the State sealer of weights and measures, has custody of the State standards. The actual sealing (or approval of the accuracy) of certain types of apparatus is carried on by a member of the faculty of the University of Tennessee, appointed by the president of that institution.

The superintendent of the division of foods, fertilizers, and dairies is, *ex officio*, superintendent of weights and measures and is in charge of all inspectional activities. Approximately 10 percent of the official time of 10 inspectors is devoted to weights and measures.

Although legal authority exists for the appointment of sealers in cities and counties, this has been done in only one county and two cities.

*Texas*—Chief, division of weights and measures, department of agriculture, Austin.

The commissioner of agriculture is, *ex officio*, State superintendent of weights and measures. In immediate charge of the service program is the chief of the division of weights and measures who supervises the work of 10 State inspectors and all city inspectors. The division is responsible for enforcement of the Babcock test law and the public weighers' law.

Although there are no county sealers, for 10 cities a total of 20 sealers and deputy sealers was reported. The local officials are granted authority within their jurisdictions corresponding to that exercised by State inspectors.

*Utah*—Chief inspector, weights and measures division, department of agriculture, Salt Lake City.

The commissioner of agriculture is, *ex officio*, superintendent of weights and measures, and is granted broad powers of supervision. He directs the work of six part-time State inspectors.

Local sealers must be appointed in cities of at least 25,000 population. Sealers in Salt Lake City and Ogden are responsible to the State department of agriculture.

*Vermont*—Supervisor, division of weights and measures, department of agriculture, Montpelier.

The commissioner of agriculture is, *ex officio*, director of standards. The supervisor of the division of weights and measures does some field work and is in immediate charge of the activities of two full-time inspectors operating throughout the State. One part-time inspector is a staff member of the bureau of markets. There are no city or county sealers. The division of creameries is responsible for the testing of all creamery scales.

*Virginia*—Director, division of markets, department of agriculture and immigration, Richmond.

The commissioner of agriculture and immigration, designated as the principal weights and measures officer, exercises authority throughout the State. The service program is in immediate charge of the director of the division of markets. This agency employs

11 licensed inspectors, 9 of whom are at times used on work other than weights and measures. It was estimated that they average about 9 months a year on duties connected with the program.

Local sealers of weights and measures are granted authority in their jurisdictions corresponding to that of the State inspectors for the State as a whole. Sealers in 16 cities are, for the most part, engaged part time in weights and measures duties. In 7 counties also, sealers devote only part time to official work.

*Washington*—Supervisor, weights and measures division, department of agriculture, Olympia.

The director of agriculture is the principal weights and measures officer. Inspectional services are in charge of the supervisor of the division of weights and measures. The division, with five inspectors on its staff, has jurisdiction over all weights and measures matters except in cities of more than 50,000 population. In three such cities only eight inspectors, in all, are employed.

*West Virginia*—Commissioner of weights and measures, division of weights and measures, department of labor, Charleston.

The commissioner of labor, ex officio, commissioner of weights and measures, with broad powers of supervision throughout the State, is responsible for inspections where there are no local sealers. The director of the physics laboratory of the University of West Virginia is, ex officio, assistant commissioner of weights and measures, and conducts tests of standards. In addition to two State inspectors of weights and measures, there are two State mine-scale inspectors.

Local sealers may be appointed in cities of at least 25,000 population and in counties. Such officials are employed in 2 cities and 6 counties.

*Wisconsin*—Chief inspector of weights and measures, division of weights and measures, department of agriculture, Madison.

The director of agriculture is the principal weights and measures official, while the chief inspector of the division of weights and measures is in immediate charge of the inspectional service. The division, employing 8 State sealers, tests equipment in all parts of the State, except in those cities where local sealers have been appointed. There are also 11 dairy inspectors who devote some time to weights and measures duties.

Sealers must be appointed in cities of at least 5,000 population. They are granted full authority to enforce the weights and measures laws, both State and city. Such sealers have been appointed in 36 cities.

*Wyoming*—Commissioner, dairy, food, and oil division, department of agriculture, Cheyenne.

The commissioner of agriculture is the principal weights and measures officer, and exercises exclusive supervision throughout the State. Two inspectors are employed. No provision is made for the appointment of local weights and measures officials.



TABLE 3.—Agencies responsible for inspection and control of weights and measures, officials in charge, and number of subordinate officials, by States

State	City in which State agency is located	State program administered by—		Number of regulatory officials (inspectors)				Number of local jurisdictions			
		Agency	Division	Official in charge of division	State	Local		Municipality	County	Total	
						Municipality	County				
Alabama	Montgomery	Department of Agriculture and Industries.	Division of Weights and Measures.	Chief, Division of Weights and Measures.	11	4	---	---	2	2	2
Arizona	Phoenix	Department of Weights and Measures.	---	State Inspector, Department of Weights and Measures.	1	18	---	---	8	8	8
Arkansas	---	---	None specially organized. <sup>2</sup>	---	---	(3)	(3)	---	---	---	---
California	Sacramento	Department of Agriculture.	Division of Weights and Measures.	Chief, Division of Weights and Measures.	23	---	146	---	58	169	58
Colorado	Denver	State Inspector of Oils Department. <sup>4</sup>	---	State Inspector of Oils	4	2	---	---	2	6	2
Connecticut	Hartford	Department of State Police.	Division of Weights and Measures.	State Inspector of Weights and Measures.	6	21	15	---	8	42	29
Delaware	---	---	None specially organized. <sup>5</sup>	---	---	---	73	---	3	3	3
District of Columbia.	Washington.	Department of Weights, Measures, and Markets.	---	Superintendent of Weights, Measures, and Markets.	17	---	---	---	---	17	---
Florida	Tallahassee	Department of Agriculture.	State Oil Laboratory	Supervising Inspector.	18	6	---	---	4	24	4
Georgia	Atlanta	Department of Revenue	Oil Inspection Division. <sup>4</sup>	State Oil Chemist.	8	2	1	---	1	11	2
Idaho	Boise	Department of Agriculture.	Bureau of Weights and Measures.	Director, Bureau of Weights and Measures.	3	---	---	---	---	3	---
Illinois	Springfield	do	Division of Standards	Superintendent of Standards.	20	58	---	---	16	78	16

<sup>1</sup> Only 1 inspector devotes full time to weights and measures services, 1 half-time, and the remaining 6 about 4 weeks a year.  
<sup>2</sup> No active supervision by the State; the Secretary of State is custodian of weights and measures standards.  
<sup>3</sup> County clerks are required to "seal all weights and measures that may be presented to them;" local police officials are authorized to make annual weights and measures inspections.  
<sup>4</sup> Responsible for inspection of dispensing devices used in the sale of petroleum products; no general supervision of weights and measures under State auspices.

<sup>5</sup> One State inspector of weights and measures and 5 State policemen.  
<sup>6</sup> No active supervision by the State; the State chemist is custodian of the weights and measures standards.  
<sup>7</sup> Part-time.  
<sup>8</sup> No State department of weights and measures; 18 inspectors check retail gasoline and kerosene dispensing devices under the direction of the commissioner of agriculture; there is also some checking of the weight of packaged goods by inspectors operating by authority of the State Food and Drug Act.  
<sup>9</sup> 18 State Department of Agriculture inspectors spend approximately one-half time inspecting gasoline and kerosene dispensing devices.

TABLE 3.—Agencies responsible for inspection and control of weights and measures, officials in charge, and number of subordinate officials, by States—Continued

State	City in which State agency is located	State program administered by—		Number of regulatory officials (inspectors)			Number of local jurisdictions				
		Agency	Division	Official in charge of division	State	Local Municipality	County	Total	Municipality	County	Total
Indiana	Indianapolis	State Board of Health, Department of Commerce and Industries.	State Bureau of Weights and Measures.	Chief, State Bureau of Weights and Measures.	3	18	15	36	12	15	27
Iowa	Des Moines	Department of Agriculture.	Division of Dairy and Food.	Chief Inspector, Division of Dairy and Food, <sup>10</sup> State Sealer of Weights and Measures, <sup>11</sup> Commissioner of Revenue and Taxation, <sup>13</sup> Director, Division of Weights and Measures of State Commissioner of Weights and Measures, <sup>14</sup> Deputy State Sealer of Weights and Measures.	12 24	3	---	27	3	---	3
Kansas	Topeka	State Commission of Revenue and Taxation.	---	Commissioner of Revenue and Taxation, <sup>13</sup> Director, Division of Weights and Measures of State Commissioner of Weights and Measures, <sup>14</sup> Deputy State Sealer of Weights and Measures.	7	---	---	7	---	---	---
Kentucky	Frankfort	Department of Agriculture and Immigration.	Division of Weights and Measures.	Director, Division of Weights and Measures of State Commissioner of Weights and Measures, <sup>14</sup> Deputy State Sealer of Weights and Measures.	12	---	---	12	---	---	---
Louisiana	Baton Rouge	Department of Agriculture.	Bureau of Weights and Measures.	Deputy State Sealer of Weights and Measures.	15 3	255	---	258	464	---	464
Maine	Augusta	Department of Agriculture.	None specially organized. <sup>16</sup>	None specially organized. <sup>16</sup>	---	9	---	9	1	---	1
Maryland	Boston	Department of Labor and Industries.	Division of Standards.	Director of Standards and Necessaries of Life.	8	386	---	394	351	---	351
Massachusetts	Lansing	Department of Agriculture.	Division of Weights and Measures.	Chief, Division of Weights and Measures.	3	26	10	39	26	10	36
Michigan	Minneapolis	Railroad and Warehouse Commission.	Department of Weights and Measures.	Supervisor, Department of Weights and Measures.	16	---	---	16	---	---	---
Minnesota	Minneapolis	Department of Agriculture.	None specially organized. <sup>17</sup>	None specially organized. <sup>17</sup>	---	---	---	(17)	---	---	---
Mississippi	Helena	Department of Agriculture, Labor, and Industry.	Division of Grain Standards and Marketing, Weights and Measures.	Chief, Division of Grain Standards and Marketing, Weights and Measures.	19 4	19	---	19	5	---	5
Missouri	Lincoln	Department of Agriculture and Inspection.	Bureau of Foods, Durgs, Dairies, and Weights and Measures.	Chief Bureau of Foods, Durgs, Dairies, and Weights and Measures.	7	2	---	9	1	---	1
Montana	Reno	Department of Agriculture and Measures.	State Sealer of Weights and Measures.	State Sealer of Weights and Measures.	5	---	---	5	---	---	---
Nebraska	Concord	Department of Weights and Measures.	Commissioner of Weights and Measures.	Commissioner of Weights and Measures.	4	20 9	---	13	9	---	9
Nevada	Concord	Department of Weights and Measures.	Commissioner of Weights and Measures.	Commissioner of Weights and Measures.	4	20 9	---	13	9	---	9
New Hampshire	Concord	Department of Weights and Measures.	Commissioner of Weights and Measures.	Commissioner of Weights and Measures.	4	20 9	---	13	9	---	9

State	Department	Motor Fuel Tax Division, <sup>21</sup>	State Superintendent of Weights and Measures.	37	37	88	19	21	4
New Jersey	do.	Motor Fuel Tax Division, <sup>21</sup>	State Superintendent of Weights and Measures.	14	37	37	19	21	4
New Mexico	Bureau of Revenue.	Bureau of Weights and Measures.	Director, Motor Fuel Tax Division.	5	140	215	59	57	116
New York	Department of Agriculture and Markets.	Division of Weights and Measures.	State Superintendent of Weights and Measures.	35	1	37	1	1	2
North Carolina	Department of Agriculture.	State Scale Inspection Department.	Chief Scale Inspector	4		4			
North Dakota	Public Service Commission.	Division of Foods and Dairies.	Chief, Division of Foods and Dairies	1	59	88	16	88	104
Ohio	Department of Agriculture.		Director, State Bureau of Standards.	23 1	1	2	1		1
Oklahoma	State Bureau of Standards.		Deputy State Scaler of Weights and Measures.	23 17	1	18	1		1
Oregon	Department of Agriculture.	Division of Market Enforcement.	Director of Standard Weights and Measures.	19	34	76	34	76	110
Pennsylvania	Department of Internal Affairs.	Bureau of Standard Weights and Measures.	Scaler of Weights and Measures.	1	39	40	39		39
Rhode Island	Department of Labor.	Division of Weights and Measures.	Commissioner of Agriculture, Commerce, and Industries.	7 11		11			
South Carolina	Department of Agriculture, Commerce, and Industries.		Director of Inspections.	24 12		12			
South Dakota	Department of Agriculture.	Division of Inspections.	Superintendent of Foods, Fertilizers and Dairies; ex officio, Superintendent of Weights and Measures. <sup>22</sup>	20 10	2	1	2	1	3
Tennessee	do.	Division of Foods, Fertilizers and Dairies.	Chief, Division of Weights and Measures.	10	20	30	10		10
Texas	Department of Agriculture.	Weights and Measures Division.	Chief Inspector, Weights and Measures Division.	27 6	2	8	2		2
Utah	Department of Agriculture.	do.							

<sup>10</sup> In charge of inspectional services.  
<sup>11</sup> In charge of standards.  
<sup>12</sup> 4 employees devote full time to testing heavy-duty scales; 20 members of the Division of Dairy and Food make weights and measures inspections, along with other duties.  
<sup>13</sup> The chancellor of the University of Kansas is State scaler of weights and measures.  
<sup>14</sup> In 1939 the Department of Inspections and Registration was abolished and the duties transferred to the State Commission of Revenue and Taxation.  
<sup>15</sup> A new State weights and measures law was approved by the Governor July 6, 1938; as yet the legislature has made no appropriation for the services specified therein.  
<sup>16</sup> The deputy State scaler devotes full time to weights and measures services; in the summer 2 inspectors are employed in addition.  
<sup>17</sup> The State Department of Markets has authority to test equipment used in the vending of agricultural commodities but is engaged in no active weights and measures program.  
<sup>18</sup> No active programs for the supervision of weights and measures, either State or local, reported.  
<sup>19</sup> No active supervision by the State; county clerks serve as weights and measures officials.  
<sup>20</sup> 3 full-time, 1 part-time.  
<sup>21</sup> The Secretary of State is custodian of the State standards; the Motor Fuel Tax Division, Bureau of Revenue, inspects dispensing devices used in selling petroleum products; sheriffs are, ex officio, public weighmasters, and appoint deputy weighmasters.  
<sup>22</sup> 3 members of the faculty of the University of Oklahoma constitute a board of control for the State Bureau of Standards; actual testing of weights and measures equipment is done by a fourth faculty member who is deputized to render this service at nominal cost.  
<sup>23</sup> Agents of the State Department of Agriculture are engaged in weights and measures supervision approximately one-fifth of their time.  
<sup>24</sup> Only 1 inspector is engaged full time in weights and measures supervision; 2 dairy inspectors, 2 liquor inspectors, and 7 pure food and drug inspectors devote part time to this service.  
<sup>25</sup> The president of the University of Tennessee is State scaler of weights and measures, and is in charge of the State standards.  
<sup>26</sup> These State Department of Agriculture inspectors spend approximately 10 percent of their time in weights and measures supervision.  
<sup>27</sup> Only 10 to 20 percent of the time of these inspectors is devoted to weights and measures.

TABLE 3.—Agencies responsible for inspection and control of weights and measures, officials in charge, and number of subordinate officials, by States—Continued

State	City in which State agency is located	State program administered by...		Number of regulatory officials (inspectors)			Number of local jurisdictions			
		Agency	Division	Official in charge of division	State	Local		Municipality	County	Total
						Municipality	County			
Vermont	Montpelier				23	4				
Virginia	Richmond	Department of Agriculture.	do.	Supervisor, Division of Weights and Measures.	29	39	30	21	7	16
Washington	Olympia	Department of Agriculture and Immigration.	Division of Markets	Director, Division of Markets.	5	13	8			3
West Virginia	Charleston	Department of Agriculture.	Weights and Measures Division.	Supervisor, Weights and Measures Division.	4	12	2	6	6	2
Wisconsin	Madison	Department of Labor.	do.	Commissioner of Weights and Measures.	31	55	36			36
Wyoming	Cheyenne	Department of Agriculture.	Dairy, Food, and Oil Division.	Chief Inspector of Weights and Measures.	2	2				
Total					398	2,105	1,231	476	352	1,519

<sup>28</sup> 2 full-time, 2 part-time.<sup>29</sup> Only 2 inspectors are engaged full time in weights and measures duties, the other 9 about 9 months a year.<sup>30</sup> 10 full-time, 11 part-time.<sup>31</sup> Only 8 inspectors are engaged full time; 11 dairy inspectors devote only a part of their time to weights and measures.

## Characteristics of Present Laws

The facts acquired in regard to existing weights and measures laws (schedule 1) were sufficient to indicate those items of the model law which promise to be widely adopted. At the same time, the differences between one State, city, or county, and another pointed to the provisions which are less likely to be generally accepted, or can be enacted only after considerable modification of laws or ordinances already in effect.

Comments on the extent of adoption of the model law, in the succeeding paragraphs of this section, are based largely on table 4<sup>35</sup> which contains an itemized summary of the results for schedule 1. This table is presented with the understanding that in cities and

TABLE 4.—Number of jurisdictions having legal provisions conforming to model weights and measures law compared with jurisdictions not having such provisions, by items

Item <sup>1</sup>	Number of jurisdictions—								
	Reported upon—			In which model law in effect for item stated			In which model law not in effect for item stated		
	States (1)	Cities (2)	Counties (3)	States (4)	Cities (5)	Counties (6)	States (7)	Cities (8)	Counties (9)
Testing commercial devices at least twice a year.....	21	47	18	6	27	12	15	20	6
Proving standards at least every 5 years.....	18	47	19	9	44	18	9	3	1
Inspecting standards at least every 2 years.....	18	47	18	13	32	13	5	15	5
Issuing regulations for law enforcement.....	21	44	18	19	37	16	2	7	2
Inspecting new equipment.....	21	47	20	12	44	16	9	3	4
Stamping or sealing approved equipment.....	30	49	20	17	48	20	3	1	0
Condemnation and seizure of unapproved equipment.....	21	48	20	21	48	20	0	0	0
Arrests for violations.....	21	48	19	19	47	18	2	1	1
Penalty for first conviction.....	21	47	18	6	16	7	15	31	11
Penalty for subsequent convictions.....	21	47	18	5	16	7	16	31	11
Labeling packages with net weight.....	22	48	20	18	47	19	4	1	1
Prohibition of use of misleading containers.....	21	44	19	10	34	17	11	10	2
Requiring weight tickets for coal, coke, or charcoal.....	21	49	20	15	46	19	6	3	1
Standard unit requirements:									
Bread.....	22	47	18	6	22	9	16	25	9
Butter or oleomargine.....	22	43	20	11	31	17	11	12	3
Milk or cream.....	21	47	20	18	40	19	3	7	1
Coal, coke, or charcoal.....	21	46	20	19	42	20	2	4	0
Wood.....	21	48	20	15	38	17	6	10	3
Standard container requirements:									
Berries and small fruits.....	21	48	19	20	47	19	1	1	0
Vegetables and fruits.....	19	41	19	13	33	14	6	8	5
Bonding administrative officers.....	20	47	20	12	27	11	8	20	9
Selecting inspectors from Civil Service lists.....	22	46	19	4	28	7	18	18	12
Discharge of personnel.....	22	45	18	8	34	11	14	11	7

<sup>1</sup> The items in schedule 1, p. 73, are stated here in abbreviated form.

counties, where provisions of the model law were found to be in effect, local ordinances supplemented by State laws, or local ordinances alone, constituted the requisite authority. It must also be stated that

<sup>35</sup> Statistical tables in the remainder of the report were largely prepared by Mary Nell Smith, Consumers' Counsel Division. Also, portions of the text were written from memoranda received from Miss Smith.

the contents of each column, (4) to (9) inclusive, are unaffected by the contents of any other column. Column (5), for example, shows without reference to States or counties the number of cities in which each specified item of the model law was being followed.

**General features.**—Weights and measures laws in more than three-fourths of the jurisdictions (States, cities, counties) included provisions which essentially conform to the following, digested from the model law:

The director of weights and measures may issue regulations for the enforcement of the weights and measures law, including specifications and tolerances for all weights, measures, and weighing and measuring devices.

Approved weighing and measuring devices must be sealed or stamped so that the public may readily recognize approved equipment.

Weights and measures officials may condemn and seize equipment which is beyond repair, or which a proprietor fails to have repaired.

The model-law provision that "all commercial weighing and measuring devices must be tested at least twice a year" was in effect in more than one-fourth of the States, one-half of the cities, and two-thirds of the counties. In most jurisdictions where this provision was not in force inspections were required to be made at least once a year. One State official reported that examination of stockyard scales once a month was compulsory.

The provision that standard weights and measures must be inspected by State officials at least once in 2 years was in effect in the majority of the States, cities, and counties. Included in the minority were jurisdictions in which the standards were checked once in 3, 4, or 5 years.

In accordance with the model law, a requirement that new weighing and measuring equipment be inspected was in effect in more than one-half of the States, nearly all the cities, and four-fifths of the counties.

**Provisions relating to standards.**—Both the city and county officials quite generally stated that, in conformity with the model law, the standard weights and measures in their jurisdictions must be proved by State standards at least once in 5 years. The weights and measures laws of one-half of the States, however, failed to contain this provision; in several States there was a requirement that the local standards be proved by State standards at least once in 10 years, and in several other States no requirement whatever. In some States, standards were proved only when city or county officials so requested.

The laws or ordinances of almost all the jurisdictions included the model-law provision that "all packages must be plainly and conspicuously labeled with their net contents."

Prohibition of the sale of any packaged commodity, if the container thereof is "so made, formed, or filled, or if it is so wrapped, as to mislead the purchaser," was reported by nearly one-half of the State officials, more than three-fourths of the city officials, and all but a very few county officials.

Bread so universally enters into the diets of American families that table 5 is presented to show the detailed conditions found in reference

to the weight units for this commodity. As applied to bread, a loaf, according to the dictionary meaning, is "a shaped mass," weight being undesignated, and certainly the diverse character of the reported information offered inadequate basis for more precise description. In most jurisdictions the units fell short of conforming completely to those stated in the model law, although often the agreement was partial. Among the variations from the recommended units were the  $\frac{3}{4}$ - and  $1\frac{1}{4}$ -pound loaves. In one city multiples of  $\frac{1}{4}$  pound were permitted. Otherwise either no regulation had been established, or merely one that weight be specified on the labels.

TABLE 5.—Jurisdictions classified according to legal weight of bread<sup>1</sup>

Weight of loaf (pounds)	Number of—			Percent of total		
	States	Cities	Counties	States	Cities	Counties
$\frac{1}{2}$ , 1, $1\frac{1}{2}$ or multiples of 1 <sup>2</sup> .....	6	22	9	27.3	46.8	50.0
$\frac{1}{2}$ , 1, $1\frac{1}{2}$ and other sizes.....	1			4.5		
$\frac{1}{2}$ , $\frac{3}{4}$ , 1, $1\frac{1}{2}$ .....	1	2	2	4.5	4.3	11.1
$\frac{1}{2}$ , $\frac{3}{4}$ , 1, $1\frac{1}{4}$ , $1\frac{1}{2}$ .....	1	2		4.5	4.3	
$\frac{1}{2}$ , 1.....	1			4.5		
1, $1\frac{1}{2}$ .....	3	10	3	13.7	21.3	16.7
1, 2.....		2			4.3	
Multiples of $\frac{1}{4}$ .....		1			2.1	
As specified on label.....	5	5	2	22.8	10.5	11.1
Undetermined <sup>3</sup> .....	3	2		13.7	4.3	
None established.....	1	1	2	4.5	2.1	11.1
Total.....	22	47	18	100.0	100.0	100.0

<sup>1</sup> Weight unpackaged at time of retail sale.

<sup>2</sup> Model-law units.

<sup>3</sup> Weights not stated by respondents but failed to conform with model-law units.

Butter or oleomargarine must be sold in the model-law units of " $\frac{1}{4}$  pound,  $\frac{1}{2}$  pound, 1 pound,  $1\frac{1}{2}$  pounds, or multiples of 1 pound" in their jurisdictions, according to one-half the State officials and a majority of the city and county officials who reported. As a rule, in the jurisdictions where these units had not been legally adopted, statement of net weight was required on the labels.

In most instances the regulations for standard containers for milk or cream were in agreement with the model law, each of these two commodities being sold in units of " $\frac{1}{2}$  gallon, 3 pints, 1 quart, 1 pint,  $\frac{1}{2}$  pint, and 1 gill." In one State and one city the use of 10-ounce containers was allowed. Two officials (one State, one city) advised that in their jurisdictions there were no regulations dealing with containers of milk or cream.

Requirements for the weight of coal, charcoal, or coke conformed generally with those in the model law. One ton (2,000 pounds, avoirdupois) was the unit of weight, and "duplicate weight tickets" were furnished with each load. In one of the States reported upon there was apparently no regulation pertaining to coal. Selling of coke or charcoal by either weight or measure was permitted in one State and two cities.

The provision that wood be sold, without exception, in the standard unit of a cord of 128 cubic feet, as set forth in the model law, had been adopted in approximately two out of every three jurisdictions, whether States, cities, or counties. For the jurisdictions in which there was nonconformity with this provision, the information

regarding the units for wood was quite diverse, as is perceived from the following summarization:

No legal units (4 States).

Ton of 2,000 pounds (1 State).

The term "cord" shall mean 128 cubic feet of wood in four-foot lengths; and if the sale is of "sawed wood" a cord shall mean 110 cubic feet when ranked, or 160 when thrown irregularly or loosely into a conveyance for delivery; if the sale is of "sawed and split wood" a cord shall mean 120 cubic feet when ranked, and 175 cubic feet when thrown into a conveyance for delivery (1 State).

Cord of 128 cubic feet, or any number of pounds (2 cities).

Cord of 128 cubic feet, or bushel (1 city).

Cord of 152 cubic feet (1 city).

"Rick" cord, defined as cord 4 feet by 8 feet on the side, and any depth (2 cities).

Load measuring 80 cubic feet (1 city).

For wood 16 inches or less: Load, "loosely thrown into trucks for delivery." Trucks must be certified by department of weights and measures as being 192 cubic feet capacity (1 city).

"Berries and small fruits must be sold by weight, or in containers of 1 quart, 1 pint, or  $\frac{1}{2}$  pint standard dry measure," all but two officials reported. One advised that in his city no regulations had been adopted for these commodities; the other quoted a State law provision which permitted their sale on the basis of "cubic content."

Progress in the adoption of the model law was also indicated by the information regarding standard barrels for fruits and vegetables other than cranberries. The capacity of 7,056 cubic inches, stated in the model law, was compulsory in more than two-thirds of the jurisdictions covered by the survey. Four States, two cities, and three counties were found to have no legal provisions for the capacity of fruit or vegetable barrels. Officials of one State and two cities said merely that sales were "by weight."

Numerous laws or ordinances were in effect to meet the special needs of local conditions. Here and there units of sale had been adopted for particular commodities that have not been previously mentioned. Such commodities include the following, none of which was named by more than three respondents: Flour, grain, potatoes, celery, lettuce, meal, sugar, honey, maple sirup, ice cream, vinegar, various alcoholic liquors, salt, poultry, lime, and petroleum products.

**Penalties.**—The facts acquired on punishments for violations of weights and measures laws related chiefly to the fines imposed. Unsatisfactory progress toward adoption of the model law was disclosed by the survey material bearing on this matter. In more than one-half of the States, cities, or counties, the fines conformed only in part to those specified by the model law.

Maximum and minimum fines, as prescribed by the laws or ordinances of the separate jurisdictions, are compared in table 6 with the fines stated in the model law. In some instances the legal provisions were more severe, and in others less severe, than those in the model law. Quite often the reported maximum or minimum was identical



with the fine prescribed therein. The smallest fine permissible was, in the States reported, \$5 for a first conviction and \$20 for any subsequent conviction; cities \$1 (first or subsequent); and counties \$10 (first or subsequent). By contrast, in both States and counties the greatest was \$500, and cities \$1,000.

TABLE 6.—Jurisdictions classified according to fines for violations of weights and measures laws or ordinances

STATES

Fine, first conviction	Number of jurisdictions in which fine for subsequent conviction —						Total
	Minimum, less than \$50; maximum, less than \$500	Minimum, less than \$50, maximum, \$500	Minimum, \$50; maximum, less than \$500	Minimum, \$50; maximum, \$500	Undetermined <sup>2</sup>	Unprovided by law	
Minimum, less than \$20; maximum, less than \$200	1					1	2
Minimum, less than \$20; maximum, \$200							
Minimum, \$20; maximum, less than \$200	1		1		1		3
Minimum, \$20; maximum, \$200 <sup>1</sup>					5	1	6
Minimum, less than \$20; maximum, more than \$200							
Minimum, more than \$20; maximum, less than \$200						1	1
Minimum, more than \$20; maximum, more than \$200						1	1
Undetermined <sup>2</sup>						8	8
Total	2		1		5	9	21

CITIES

Minimum, less than \$20; maximum, less than \$200	4				1		5
Minimum, less than \$20; maximum \$200	1	1			2	1	5
Minimum, \$20; maximum, less than \$200			1				1
Minimum, \$20; maximum, \$200 <sup>1</sup>			1	13	2		16
Minimum, less than \$20; maximum, more than \$200	1	2	1		3		6
Minimum, more than \$20; maximum, less than \$200	1						1
Minimum, more than \$20; maximum, more than \$200				1			1
Undetermined <sup>2</sup>		1			11		12
Total	7	4	2	16	17	1	47

COUNTIES

Minimum, less than \$20; maximum, less than \$200	1		1				2
Minimum, less than \$20; maximum, \$200		1					1
Minimum, \$20; maximum, less than \$200							
Minimum, \$20; maximum, \$200 <sup>1</sup>				5	1	1	7
Minimum, less than \$20; maximum, more than \$200							
Minimum, more than \$20; maximum, less than \$200				1			1
Minimum, more than \$20; maximum, more than \$200				1	5	1	7
Undetermined <sup>2</sup>							
Total	1	1	1	7	6	2	18

<sup>1</sup> Specified in model law.

<sup>2</sup> Amount of fine not stated, or variable; failed to conform with provisions of model law.

Some respondents stated that the fines imposed in their jurisdictions did not conform with the minimum or maximum specified in the model law, yet failed to give the exact provisions. Others also reported fines differing from those in the model law, but said that the amount depended on the character of the particular violation, or

that it was "left to the discretion of the court." In all such instances the jurisdictions were classified as "Undetermined" (table 6).

Imprisonment instead of, or in addition to, fine was legally provided for in most of the jurisdictions. A jail sentence of not more than 90 days was usually permitted for a first conviction, as prescribed by the model law. For subsequent convictions imprisonment was ordinarily at variance with the model law (maximum, 1 year); the period of jail sentence frequently rested upon the "discretion of the court."

The penalties prescribed by law in their jurisdictions were considered adequate by three out of every four officials reporting. A few asserted that although they were enforcing the penalties prescribed in the model law, they considered them inadequate. Four officials (two States, two cities) volunteered this criticism in reference to first convictions, six officials (three States, two cities, one county) made similar comments in regard to subsequent convictions.

Inspectors were permitted to make arrests in weights and measures cases, as contemplated by the model law, in all but four of the jurisdictions considered. Two States were included, however, in the jurisdictions where this privilege was not granted.

Punishments for violations of weights and measures laws are discussed, without reference to the model law, in the later section relating to inspectional activities.

**Employment policies.**—The model law specifies that "administrative officers must be bonded for at least \$1,000 for the faithful performance of their duties." This provision was in effect in the majority of jurisdictions reported upon; in several instances no bond whatever was required.

In conformity with the model law, selection of inspectors from civil-service registers was required by the weights and measures laws of 61 percent of the cities considered. Appointments of inspectors were governed by such a provision in only 18 percent of the State bureaus and 37 percent of the county bureaus.

The provision that "no member of the department shall be discharged or reduced in pay or position except for inefficiency or incapacity, or other just cause, and then only after presentation of written charges and a hearing" was in effect in more than one-third of the States, three-fourths of the cities, and one-half the counties.

## Budgetary Provisions and Sizes of Staffs

The differences in laws and regulations, brought out in the preceding section, focus attention on matters affecting administration of weights and measures programs. Of primary importance for effective supervision, is the need of strong budgetary support and a sufficient number of inspectors. In turning now to the data obtained through the medium of schedule 2, consideration is given first to the question of adequacy of funds and personnel.

**Typical allowances.**—Funds for weights and measures programs, though varying widely, tended to be restricted considering the diversified character of the services rendered. For the State bureaus, the smallest annual amount was \$8,500; city \$50; and county \$400; while

for each class of jurisdiction the largest amount exceeded \$60,000 (table 7). In approximately one-half the separate State budgets, the allowance for the item of weights and measures was less than \$23,000, in one half the city budgets less than \$4,800, and one-half the county budgets less than \$2,700.<sup>36</sup>

TABLE 7.—Jurisdictions distributed according to budgetary allowance for weights and measures supervision in 1 year, with cumulative proportions

Amount in budget	Number of—			Proportion of total jurisdictions providing not more than stated amount		
	States	Cities	Counties	States	Cities	Counties
				<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Less than \$2,500.....		18	28		27.3	47.5
\$2,500-\$4,999.....		16	16		51.5	74.6
\$5,000-\$7,499.....		4	4		57.6	81.4
\$7,500-\$9,999.....	2	6	1	14.3	66.7	83.0
\$10,000-\$19,999.....	4	11	6	42.9	83.3	93.2
\$20,000-\$29,999.....	3	7	2	64.3	93.9	96.6
\$30,000-\$39,999.....	1	1	1	71.4	95.4	96.6
\$40,000-\$49,999.....	1	1	1	78.6	97.0	98.3
\$50,000-\$59,999.....	2	1	1	92.9	98.5	98.3
\$60,000 or more.....	1	1	1	100.0	100.0	100.0
Total.....	14	66	59			

TABLE 8.—Jurisdictions distributed according to per capita budgetary allowance for weights and measures supervision in 1 year, with cumulative proportions

Per capita amount in budget	Number of—			Proportion of total jurisdictions providing not more than stated amount		
	States	Cities	Counties	States	Cities	Counties
				<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
Less than \$0.01.....	3	2	4	21.4	3.0	6.8
\$0.01-\$0.019.....	7	6	8	71.4	12.1	20.3
\$0.02-\$0.029.....	2	17	8	85.7	37.9	33.9
\$0.03-\$0.039.....	1	7	9	92.9	48.5	49.2
\$0.04-\$0.049.....		10	6	92.9	63.6	59.3
\$0.05-\$0.059.....		9	9	92.9	77.3	74.6
\$0.06-\$0.069.....		3	3	92.9	81.8	79.7
\$0.07-\$0.079.....		3	6	92.9	86.4	89.8
\$0.08-\$0.089.....		4	5	92.9	92.4	98.3
\$0.09-\$0.099.....		1	1	92.9	93.9	100.0
\$0.10 or more.....	1	4	1	100.0	100.0	100.0
Total.....	14	66	59			

When the funds for weights and measures programs are expressed in per capita terms it is revealed that the annual amounts set aside in the city and county budgets generally exceeded the amounts in the State budgets. The per capita funds ranged from less than 1 cent for the separate classes to more than 9 cents for counties, and to more than 10 cents for cities and States (table 8), but marked differences are apparent from the detailed comparisons. Cities and counties comprising approximately one-half the total, each provided less than 4.1 cents per capita, whereas the States correspondingly pro-

<sup>36</sup> These are the medians, denoting the budgetary allowances which were exceeded in 50 percent of the jurisdictions, and not exceeded in the other 50 percent. (Medians are occasionally used herein instead of arithmetic averages, not being unduly affected by the data from a few jurisdictions of exceptionally large population.)

vided but 1.6 cents per capita.<sup>37</sup> This greater financial support by city and county governments seems to reflect the fact that the local enforcement programs were often much more intensive and specialized than the State programs.

**Variation according to population.**—Budgetary provisions for the programs of weights and measures administrative agencies differed in general according to the number of people living in the various jurisdictions. The relationships are graphically presented in figure 1.<sup>38</sup>

Figure 1 is designed to show that despite relatively wide variability the total budgetary funds for weights and measures bureaus tended to be greater in jurisdictions of comparatively large population than in small. The straight lines shown therein may be looked upon as a means whereby officials who cooperated in the survey can observe just how the funds for their bureaus compared with the averages established from the survey data. To seek further inferences from figure 1 would be unwarranted; also, care should be taken not to construe the indicated budgetary amounts as necessarily the most desirable from the standpoint of operating efficiency.

A different type of situation is evident when financial support of weights and measures programs is examined from the standpoint of the per capita funds provided. Referring to the central tendencies depicted in figure 2: Maximum per capita support was accorded the programs in the States, cities, and counties of fewest inhabitants. The character of the variation is well exemplified in the lower, right diagram of figure 2. Thus for counties of 15,000 population the per capita budgetary allowance is indicated by the central tendency as 5.82 cents, which compares with 2.96 cents for counties of 425,000 population. Contrasts such as are afforded by figure 2 seem to raise doubt regarding the economy of administration of weights and measures programs in many small jurisdictions.

There were no special provisions for the support of the weights and measures bureaus of one of the States, two of the cities, and three of the counties considered. Inspections presumably were made as an incidental activity of boards of health, police departments, or sheriffs' offices. Since it was impossible to evaluate administrative cost of the weights and measures services, the jurisdictions where this situation existed are not represented in the foregoing summarizations.

**Fees.**—Financial support of weights and measures bureaus, in the majority of the jurisdictions surveyed, was primarily received from general tax funds, but in some jurisdictions (10 States, 34 cities, 7 counties) fees were collected for testing and other services rendered by the inspectors. The largest amount obtained from fees in any State was \$75,000; in any city \$30,000; and in any county \$800. In 6 States, 5 cities, and 2 counties, fees were segregated for the specific use of weights and measures bureaus, and allotted to the budgetary item of weights and measures. In 2 States and 1 city, the fees exceeded the budgetary allowances.

In response to the question, "Is budget sufficient to care for all activities required by law?" approximately three-fourths of the State

<sup>37</sup> For the States the average per capita allowance was 2.4 cents, for the cities 4.6 cents, and for the counties 4.3 cents. All per capita amounts are based on population estimates made by the reporting officials. Such estimates are also used in subsequent analyses of data.

<sup>38</sup> Figures 1 to 5 inclusive show the data underlying appendix tables 15, 16, 17, and 18, except that to conserve space very unusual jurisdictions are occasionally not represented.

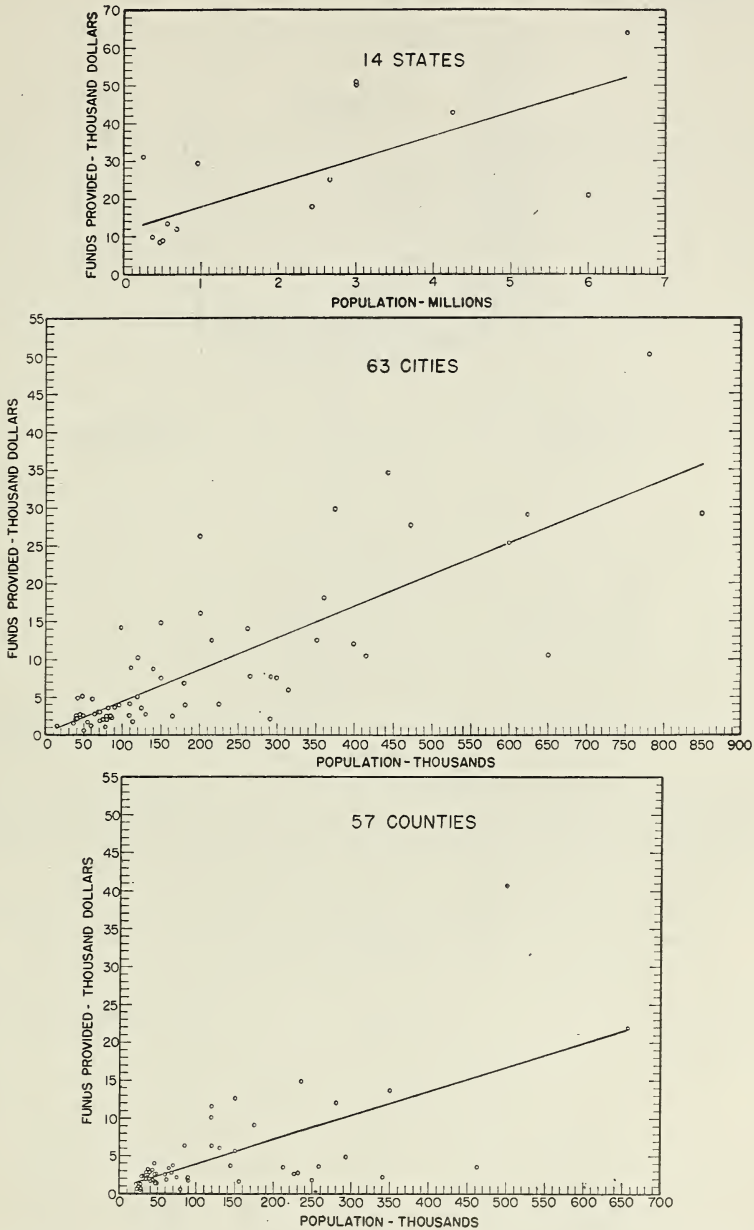


FIGURE 1.—In each of the above diagrams the central tendency indicates that the larger the population the greater, on the average, were the budgetary funds provided in one year for weights and measures services, though the funds for individual jurisdictions, shown by the small circles, varied widely.

officials, and one-half the city and county officials, replied in the negative. Little information was advanced, however, as to the amount of money desired.

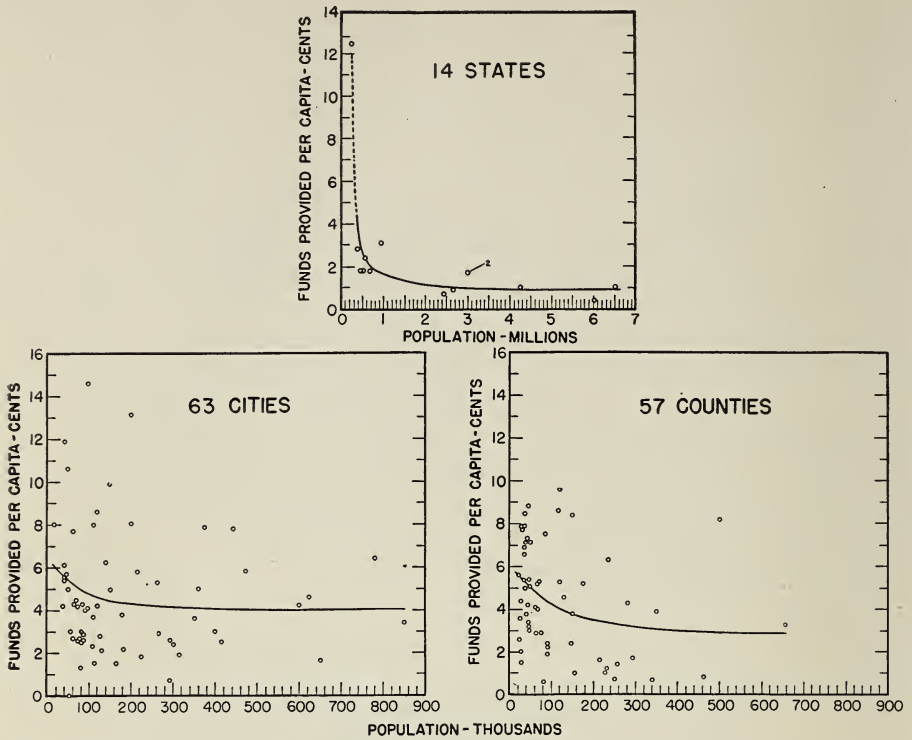


FIGURE 2.—In the above diagrams the central tendencies indicate that the larger the population the less, on the average, were the per capita budgetary funds provided in one year for weights and measures services. Greatest differences occurred between jurisdictions of comparatively small population.

TABLE 9.—Jurisdictions distributed according to size of staff of weights and measures administrative agency, with cumulative proportions

Size of staff (persons)	Number of—			Proportion of total jurisdictions having staffs of not more than stated size—		
	States	Cities	Counties	States	Cities	Counties
1.....		16	23	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
2.....		22	24		20.8	36.9
3.....	3	9	3	15.0	49.4	72.3
4.....	3	2	5	30.0	61.0	76.9
5.....	3	4	6	45.0	63.6	84.6
6.....	1	5		45.0	68.8	93.8
7.....	1	4	1	50.0	75.3	93.8
8.....	2	2		55.0	80.5	95.4
9.....	1	2		65.0	83.1	95.4
10.....		2		70.0	85.7	95.4
11.....		2		70.0	88.3	95.4
12.....	2	2	1	70.0	90.9	95.4
13.....		2		80.0	93.5	96.9
14.....			1	80.0	93.5	96.9
15 or more.....	4	5	1	80.0	93.5	98.5
Total.....	20	77	65	100.0	100.0	100.0

**Number of officials.**—Agencies charged with the administration of weights and measures programs ordinarily consisted of few persons. In the majority of State bureaus, the staff was composed of less than eight members, the city bureaus less than four, and the county bureaus less than three. The pertinent distributions are shown in table 9.

Size of staff tended to vary upward with the amount of money provided for operating purposes (fig. 3). At the same time, frequent inconsistencies were discovered; the personnel were in some instances much more numerous, and in other instances less numerous, than appeared to be consistent with the budgetary funds. For example, in one city where \$10,400 was made available for 1 year there were 11 inspectors, yet in another city where the funds amounted to \$8,950 only 1 inspector was employed. Similar comments could be made in reference to the correlation between size of staff and population (fig. 4).

Both the city and county weights and measures staffs usually exceeded the corresponding State staffs in relative size. Per 100,000 population the individual State bureaus were comprised of from less than .1 to 2.0 inspectors (median, .6), the city bureaus from .2 to 13.3 inspectors (median, 2.2), and the county bureaus from .2 to 7.4 inspectors (median, 2.7). On this basis of number per 100,000 population, the largest supervisory organizations in each class were maintained in jurisdictions of comparatively few inhabitants,<sup>39</sup> a situation analogous to that already discussed in connection with per capita budgetary support. Further doubt therefore seems to be raised that in many of the smaller jurisdictions weights and measures programs were being economically administered.

For jurisdictions of small population, administration of weights and measures programs entails a special problem of avoiding high per capita cost. Difficulty is presented in meeting this problem because the salary of a sealer is a relatively fixed charge. Moreover, the same minimum amount of equipment is often needed as in jurisdictions of medium population; at least one unit of each type of testing apparatus is necessary, even if not frequently used.

Some jurisdictions of small population were endeavoring to cope with the problem of keeping down the cost by employing sealers on a part-time basis, in occasional instances only a few weeks in the year. The general opinion of the respondents was, however, that the work of inspecting and testing weights and measures is more effectively done if sealers are engaged full time in official duty.

A few States were found to be attacking the problem in thinly populated sections by making counties responsible for local supervision of weights and measures, rather than towns or townships. In other instances several towns were cooperating in the employment of a full-time sealer. An illustration is afforded in 1 State (Maine) where weights and measures were being inspected and tested in 464 cities and towns, yet there were only 255 local sealers. In this State legal authority existed for small communities to combine in engaging the services of full-time sealers.

<sup>39</sup> Graphical evidence is omitted. In addition to table 9, data on size of staff are given in tables 16 and 17.

The question of when to employ the services of a full-time sealer has been considered by the National Conference on Weights and Measures. Form 2 of the Model State Law on Weights and Measures, adopted by the conference, contains the provision that a sealer shall be employed in each county having a population of 20,000 or more, and in each city of 25,000 or more.<sup>40</sup> Both the survey material and cor-

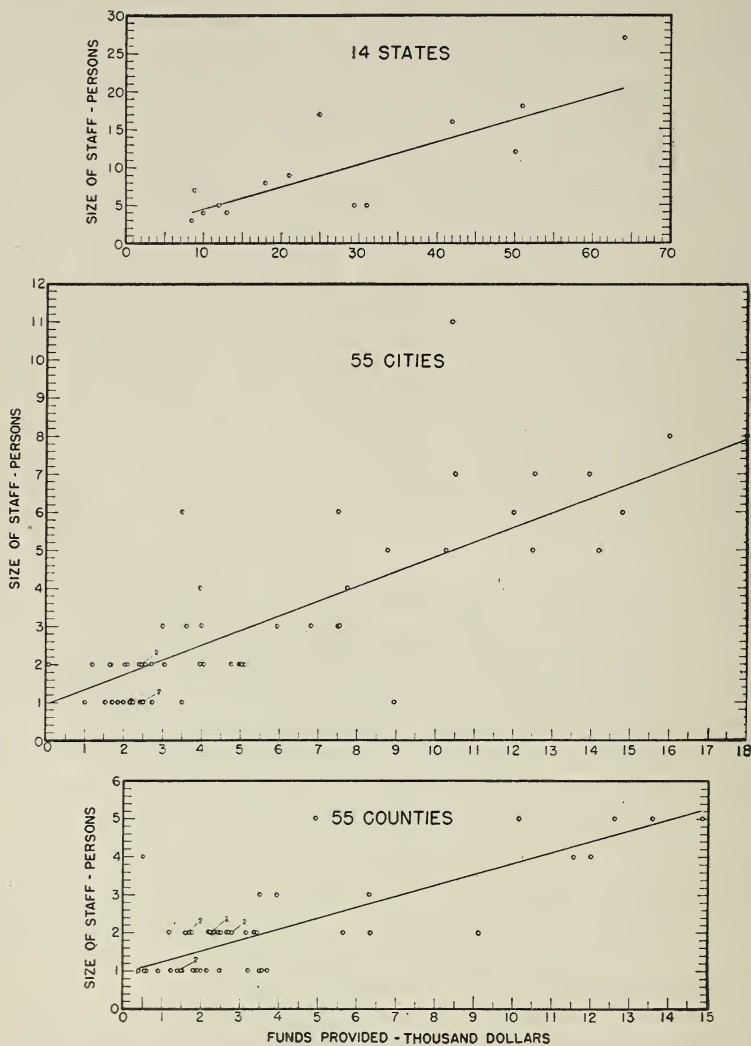


FIGURE 3.—The number of personnel of weights and measures administrative agencies in the year considered was in general consistent with financial support, but there were frequent exceptions in individual jurisdictions.

respondence with local officials revealed, however, that factors other than population also affected the number of full-time sealers. The additional factors included the number of weighing and measuring devices, the number of establishments equipped with such apparatus,

<sup>40</sup> See *Model State Law on Weights and Measures*, Letter Circular 620, National Bureau of Standards, sections 12 and 13 of Form No. 2, pp. 19-20.



the frequency with which inspections were required by law, and the area covered by inspectors.

## Inspectional Activities

Details of the actual programs of weights and measures inspection, as brought to light by the survey, are discussed in the present section, which is divided into four parts.<sup>41</sup> These parts are concerned re-

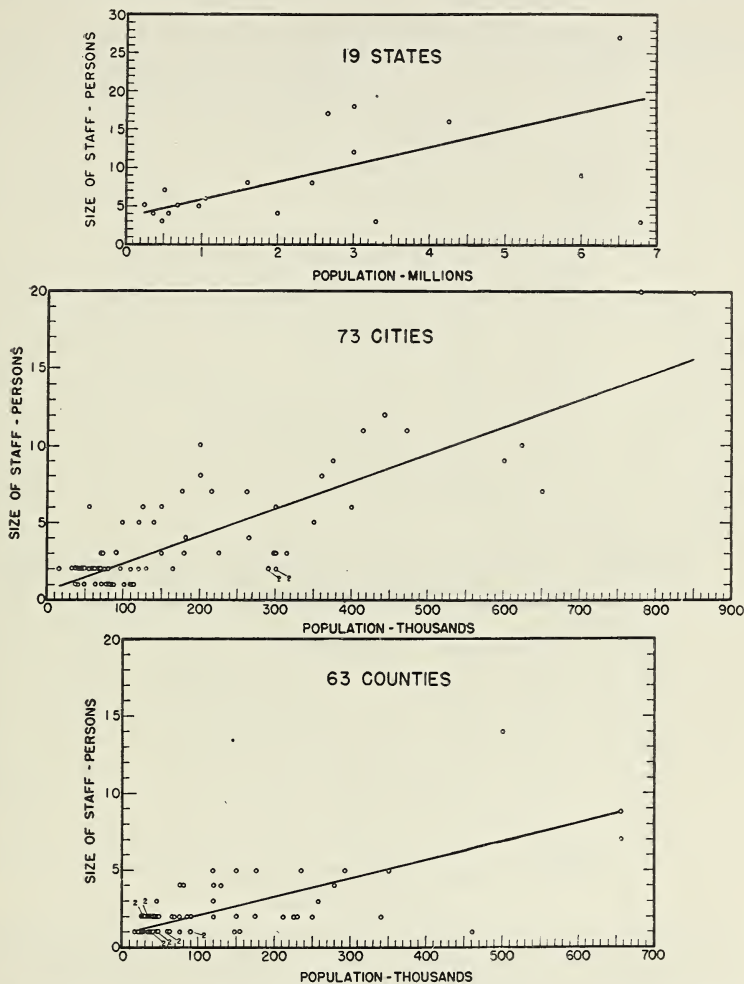


FIGURE 4.—The above diagrams show how the number of personnel engaged in the inspection and control of weights and measures varied according to the populations of the jurisdictions.

spectively with official visits made to establishments having weighing and measuring equipment, tests of certain types of apparatus, the results of checking up on sales practices in the interest of ascertaining

<sup>41</sup>In this section a number of State bureaus previously considered do not enter into the discussion, and are not represented in tables 10 to 14, inclusive. To avoid duplication, State bureaus are excluded if the reports thereon included data on inspections by city and county officials. Similar qualification applies to tables 17 to 33, inclusive.

whether or not merchandise was short in weight, and punishment meted out to violators of pertinent laws, ordinances, or regulations.

**Official visits.**—In reviewing the supervisory activity of inspectors, with especial reference to official visits, consideration may first be given to the establishments in which weighing or measuring equipment had been installed. During the year covered by the survey official visits for testing purposes were made to approximately 65 percent of the establishments in this category on the inspection lists

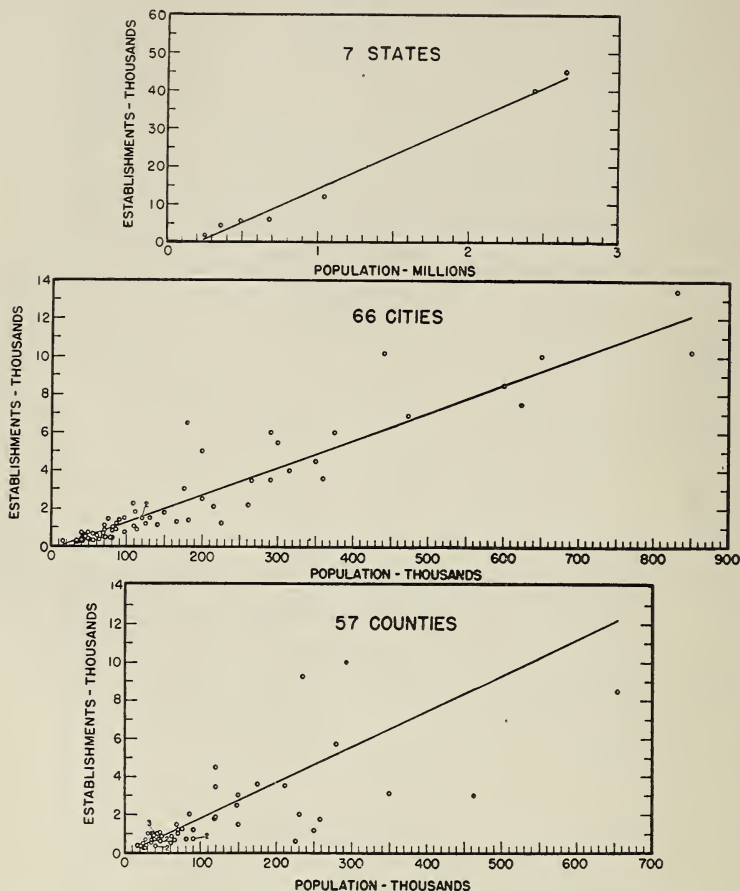


FIGURE 5.—Each of the above diagrams shows how the number of establishments having weighing and measuring equipment tended to be greater with population. Appreciable deviations from the central tendency are especially noticeable in the diagram for the counties.

of the State weights and measures bureaus, and to 90 percent of those on the lists of the city and county bureaus.<sup>42</sup>

The number of visits to an establishment depended on the number of inspectors. If the ratio of inspectors to establishments was less

<sup>42</sup> The number of such establishments, listed at the separate weights and measures bureaus, varied as follows: State, from 1,700 to 45,000 (median, 7,000), city from 200 to 10,600 (median, 1,350) and county from 250 to 35,000 (median, 1,050). Differences in the totals between jurisdictions were to a considerable extent consistent with differences in population. See figure 5 and table 18.

than 1 to 1,000, there was an average of more than 1 visit in the year. If, on the other hand, the ratio was as large as 1 to 1,500 for a State weights and measures bureau, 1 to 1,750 for a city bureau, or 1 to 2,000 for a county bureau, visits were not made to all the establishments. It was unusual for establishments to be visited more than twice during the year; the averages in the upper half of table 10 suggest that this was largely true irrespective of differences in population between jurisdictions.<sup>43</sup>

TABLE 10.—Average number of official visits in 1 year per establishment having weighing and measuring equipment, and average per staff member, in stated number of jurisdictions, by population

## PER ESTABLISHMENT

Population (thousands)	Average number of visits in—			Number of—		
	States	Cities	Counties	States	Cities	Counties
Less than 20.....		13.3	1.5		1	1
20-29.9.....			1.5			5
30-39.9.....		4.8	1.6		3	8
40-49.9.....		1.6	1.5		7	10
50-99.9.....		2.2	1.4		19	12
100-149.9.....		1.6	1.1		9	4
150-199.9.....		1.6	1.3		5	3
200-249.9.....		2.6	1.9		4	3
250-499.9.....	1.3	1.7	1.7	3	10	5
500-999.9.....	1.0	1.4	1.5	1	4	1
1,000-1,999.9.....	1.0	1.7	1.0	1	1	1
2,000-2,999.9.....	.4	2.4	1.0	2	1	1
Average.....	.9	2.2	1.5			
Total.....				7	64	54

## PER STAFF MEMBER

Less than 20.....		1,500	600		1	1
20-29.9.....			514			5
30-39.9.....		923	1,010		3	8
40-49.9.....		541	728		7	10
50-59.9.....		948	938		19	12
100-149.9.....		898	859		9	4
150-199.9.....		719	1,305		5	3
200-249.9.....		956	1,169		4	3
250-499.9.....	949	1,428	2,409	3	10	5
500-999.9.....	1,200	1,166	1,808	1	4	1
1,000-1,999.9.....	2,000	1,471	618	1	1	1
2,000-2,999.9.....	1,266	1,057	894	2	1	1
Average.....	1,226	985	1,037			
Total.....				7	64	54

Lack of pronounced correlation between population and the number of visits per establishment might not necessarily signify that the protective services of the weights and measures bureaus in small jurisdictions compared favorably with those in large jurisdictions. The number of visits per staff member must also be considered in connection with the matter of comparable administrative efficiency.

Visits made during the year by individual members of the State weights and measures bureaus (median, 1,300 per staff member) far outnumbered those of the city or county bureaus (900 per staff mem-

<sup>43</sup> Visits per establishment in jurisdictions of very small population outnumbered the visits per establishment in other jurisdictions. Except in this detail, little relation to population could be discovered.

ber). Of special bearing on administrative efficiency was the fact that in jurisdictions of small or medium population the visits were fewer, on the average, than in those of large population (table 10). Although the reasons for this situation were indeterminable from the reported information, explanation might be forthcoming on several grounds. The frequently reported practice of employing inspectors on a part-time basis probably affords the main explanation. In other cases, large areas of supervision, establishments rather widely scattered, and some lack of interest or energy on the part of inspectors, may have been contributing factors.

For weights and measures bureaus in cities and counties of small population particularly, the foregoing observations on visits per staff member complete a cycle of references to possible weaknesses in economy of administration. Comparatively strong financial support per capita, large number of staff members per capita, and now fewer officials visits per staff member suggest that even though the actual testing in jurisdictions of small population often may have been just as competently done as in jurisdictions of large population, it was at greater relative cost. All these circumstances together indicate that the problem of improving conditions would entail the development of a means of reducing overhead expenses without at the same time lessening that protection to consumers which properly managed inspectional services provide.

**Tests of apparatus.**—The information regarding official tests of apparatus was characterized by incompleteness, owing to a widespread practice of keeping records only in terms of general totals. In summarizing the data on examinations of scales, weights, pumps and retail-type meters, and miscellaneous apparatus, it is consequently possible to make only incomplete references to the separate items composing these four types.

Attention paid to the testing of scales by weights and measures bureaus in particular States, cities, or counties was occasionally much greater (or less) than by the bureaus in other States, cities, or counties of the same, or nearly the same, population. A director in one county of 125,000 population, for example, reported an aggregate of 9,800 scales examined in the preceding year, nearly 6,700 more than comparisons showed to be typical for counties in that class. Aside from such unusual records, differences in the total between jurisdictions were fairly consistent with differences in the number of inhabitants.

The tests of scales disclosed a total of 20 percent, or 1 in 5, out of order. This total was made up of 12 percent approved following adjustments, 7 percent condemned for repair, and 1 percent confiscated.<sup>44</sup> From one jurisdiction to another the proportion found satisfactory apparently varied according to the stringency of enforcement of weights and measures regulations. Extremes were displayed by some bureaus in approving without qualification every scale inspected, and by a few others in always requiring adjustments. The reported data pertained chiefly to small-capacity scales, suitable for weighing quantities up to 400 pounds.

<sup>44</sup> Based on table 11; data on tests of apparatus are also given in tables 19 to 26, inclusive.

TABLE 11.—Summary of testing activities in 1 year in stated number of jurisdictions, by type of apparatus

## STATES

Type of apparatus	Number of jurisdictions	Units examined		Proportion approved			Proportion not approved		
		Total	Per jurisdiction, median	Without adjusting	After adjusting	Total	Condemned for repair	Confiscated and destroyed	Total
		Number	Number	Percent	Percent	Percent	Percent	Percent	Percent
Scales.....	10	127,932	8,300	82.2	10.8	93.0	6.5	0.5	7.0
Weights.....	8	89,336	2,000	93.9	3.7	97.6	.3	2.1	2.4
Pumps and retail-type meters.....	11	109,313	10,830	71.4	18.5	89.9	9.8	.3	10.1
Miscellaneous.....	10	130,960	2,000	95.0	.6	95.6	.3	4.1	4.4

## CITIES

Scales.....	63	246,390	1,964	79.7	12.5	92.2	6.8	1.0	7.8
Weights.....	56	321,608	2,000	96.6	1.1	97.7	.6	1.7	2.3
Pumps and retail-type meters.....	63	115,416	956	81.1	10.2	91.3	8.2	.5	8.7
Miscellaneous.....	60	15,977,760	1,667	94.4	2.7	97.1	1.4	1.5	2.9

## COUNTIES

Scales.....	59	217,061	1,469	81.0	12.3	93.3	5.8	0.9	6.7
Weights.....	57	242,990	1,964	96.5	1.1	97.6	1.0	1.4	2.4
Pumps and retail-type meters.....	60	133,504	1,400	85.8	6.4	92.2	7.4	.4	7.8
Miscellaneous.....	61	2,698,210	2,450	92.9	3.4	96.3	2.2	1.5	3.7

Investigations of the accuracy of weights were made in every jurisdiction represented in the survey data. The number of investigations varied rather uniformly with number of inhabitants, though the total was sometimes difficult to reconcile with population. An example of unusual activity in checking on weights was provided in one city of 75,000 inhabitants; during the year, approximately 4,300 weights were tested by the local inspectors, 2,500 more than the survey indicated to be typical of cities of that size. Weights of the avoirdupois type made up four-fifths of the aggregate reported on, prescription weights the remainder.

Of the weights tested, 1 in 25 was faulty. Respondents' statements as to results were by no means uniform however; in one-seventh of the jurisdictions no weights were found unsatisfactory, yet the eliminated proportion was often considerably above the general average, in one case (a city) running up to 27.3 percent. In a certain city the local inspectors confiscated 23 percent (1,600 examined), whereas in another city of nearly the same population the inspectors confiscated only 2.7 percent (2,300 examined). This and similar contrasts are difficult to explain. While incorrect weights undoubtedly presented a much more serious problem in some jurisdictions than in others, differences in official interest may well have contributed to the variation uncovered by the survey.

In checking on pumps and retail-type meters the State weights and measures bureaus were especially active. From the standpoint of results also these bureaus were outstanding; of the units of apparatus

tested about 1 in 5 was functioning incorrectly, 1 in 10 badly enough to necessitate repair or confiscation. The records as a whole (State, city, county) showed 1 in 9 unsatisfactory in some respect, and 1 in 11 sufficiently out of order to be designated for repair or confiscation. Here, too, the averages obscure marked differences in the results of inspections. Inconsistencies between jurisdictions were no less evident for pumps and retail-type meters than for weights and scales.

Tests of miscellaneous equipment were confined chiefly to milk bottles, lubricating oil bottles, liquid-capacity measures, and dry-capacity measures. In the aggregate, 3 percent of such equipment was found unfit for further use.

All in all, the results of the tests would indicate material differences in both the character of the regulations and stringency of enforcement. Although in no instance was a report received as to the total units of apparatus, adjustments and condemnations were numerous enough to suggest that the buying economy of consumers was quite adversely affected in many communities. There can be no doubt that faulty apparatus contributed in an undetermined, though probably considerable degree, to the problem of short weighing or measuring.

**Short weighing or measuring.**—When the survey schedule was prepared, items were incorporated for determining so far as possible (1) how much attention was officially given to the matter of checking on the weights and measures of commodities on sale, and (2) the extent that purchasers of coal, bread, or packages of merchandise were or were not receiving the quantities they were paying for. These objectives were but incompletely realized.

Differing administrative policies affected the character of the data collected. In some bureaus the practice was to make investigations of short weighing or measuring only after complaints were received, whereas in other bureaus such investigations were part of the regular duty of the inspectors. Then, too, in checking on merchandise the inspectors in many jurisdictions are believed to have been more assiduous than usual in those establishments where, for example, the first few packages examined were found short weight. The factor of selectivity, entering into the data as the result of either practice, would tend to distort the averages in the direction of overstatement of the seriousness of short weighing.

The usefulness of the acquired information was also somewhat lessened through a misunderstanding of what was meant in the schedule by "supervisory investigations." Respondents probably would have been more familiar with the term "check-weighings" or "try-out inspections."

Administrative attention to the problem of short weighing or measuring varied markedly, even between bureaus composed of the same number of staff members. To make a single illustrative comparison: In a certain city, where 2 inspectors were employed, 538 loads of coal, 500 loaves of bread, and more than 17,600 packages of merchandise were officially weighed during the year considered; yet in another city, where there were also 2 inspectors, no bread or packages of merchandise were weighed. The reasons for this particular contrast were not apparent; differences in policy, or in interest, may have been responsible.

Limitations of data and variations in administrative activity were nevertheless insufficient to completely obscure the importance of the fundamental problem. Evidence of short weighing or measuring, of one sort or another, was discovered by the State inspectors in roughly 1 investigation in 5; by the city inspectors, 1 in 6; and by the county inspectors, 1 in 7.<sup>45</sup> The ratio appeared to be quite independent of the factor of population; generally speaking, short weighing or measuring was relatively no more prevalent in the small States, cities, or counties than in the large. In 3 counties no evidence of the practice was detected, in 1 instance despite more than 2,500 investigations.

TABLE 12.—General summary of data relating to short weighing or measuring

Item	States	Cities	Counties
Jurisdictions, total.....number.....	4	41	22
Investigations:			
Total, all jurisdictions.....do.....	6,302	178,672	388,525
Median per jurisdiction.....do.....	1,000	363	251
Investigations disclosing short weighing or measuring:			
Total, all jurisdictions.....do.....	1,177	16,245	14,280
Median per jurisdiction.....do.....	201	76	40
Proportion of investigations disclosing short weighing or measuring:			
Median per jurisdiction.....percent.....	20.0	17.2	14.0

Larger total quantities of coal were checked on, as a rule, by the city bureau staffs than by the State or county.<sup>46</sup> Within each class of jurisdiction the reported aggregate number of loads varied considerably, however. One State director advised that no coal was weighed during the year by the inspectors on his staff. Information to the same effect was given by more than one-fifth of the county officials and a few of the city officials responding. However, in several jurisdictions the inspectors had weighed more than 1,000 loads.

This activity in respect to coal was justified by the results, although some respondents (city and county) reported that no short weight had been discovered. For the State bureaus, short weight amounted to 15 percent of the total quantity checked on; for the city bureaus, 8 percent; and county bureaus, 6 percent (median proportions). The proportions for the separate jurisdictions were frequently much greater than here stated. The pertinent distributions are shown in table 13.

The survey results for bread were essentially similar to those for coal. In the typical jurisdiction considerably less than 1,000 loaves were officially weighed in the year.<sup>47</sup> In a few jurisdictions no attention was paid to this commodity while the records in some cases disclosed totals exceeding 5,000 loaves. Of the loaves weighed by the city inspectors, 8.1 percent did not conform to the required number of ounces, as compared with 7.5 percent for the State bureaus, and 4.9 percent for the county bureaus. Contrast was afforded by 1 city where 375 loaves were checked on, and 49.3 percent were below

<sup>45</sup> Based on the percentages in the bottom line of table 12. For the year considered, the number of investigations of short weighing or measuring (all kinds) varied as follows: State bureaus, 120 to nearly 4,500; and city and county bureaus alike, from less than 100 to more than 10,000.

<sup>46</sup> Median quantities weighed during the year: State, 42 loads; city, 78 loads; county, 39 loads. These quantities are based on the upper section of table 30. Tables 27 to 30, inclusive, all relate to short weighing or measuring.

<sup>47</sup> Median quantities weighed: State, 625 loaves; city, 750 loaves; county, 358 loaves. These quantities are based on the middle section of table 30.

the official standard of weight, and 1 county where more than 10,300 loaves were weighed, every one of which conformed to regulations.

Packages of merchandise were officially checked on in a greater number of jurisdictions than was either coal or bread. Of 124 bureaus represented in the survey, there were only 2 inactive in this matter. Several thousand packages were usually reported as having been examined.<sup>48</sup> Of the total, a larger proportion was found short weight by the city inspectors (8.2 percent) than by the county (7.2 percent) or State (5.0 percent). The results in one city were conspicuous for the reason that 2,800 packages were weighed and all found satisfactory.

TABLE 13.—Coal, bread, packages of merchandise: Jurisdictions distributed according to percentage of quantity found short weight in 1 year, with cumulative proportions

## COAL

Percent of quantity short weight	Number of—			Proportion of total jurisdictions in which not more than stated percent of quantity short weight		
	States	Cities	Counties	States	Cities	Counties
0-4.9		1 <sup>24</sup>	2 <sup>16</sup>	Percent	Percent	Percent
5-9.9	1	11	8	25.0	39.3	44.4
10-19.9	2	12	6	75.0	57.3	66.7
20-29.9	1	6	1	100.0	77.0	83.3
30-39.9		4	2		86.9	86.1
40-49.9			1		93.4	91.7
50 or more		4	2		93.4	94.4
Total	4	61	36		100.0	100.0

## BREAD

0-4.9	1	3 <sup>20</sup>	4 <sup>17</sup>	20.0	40.0	51.5
5-9.9	3	8	7	80.0	56.0	72.7
10-19.9	1	13	5	100.0	82.0	87.9
20-29.9		4	2		90.0	93.9
30-39.9		3	2		96.0	100.0
40-49.9		2			100.0	
50 or more						
Total	5	50	33			

## PACKAGES OF MERCHANDISE

0-4.9	3	5 <sup>23</sup>	20	50.0	35.9	37.7
5-9.9	1	14	15	66.7	57.8	66.0
10-19.9	1	14	7	83.3	78.1	79.2
20-29.9	1	5	5	100.0	85.9	88.7
30-39.9		4	4		92.2	96.2
40-49.9		1	1		93.8	98.1
50 or more		3	1		100.0	100.0
Total	6	64	53			

<sup>1</sup> Includes 8 cities in which no coal found short weight.

<sup>2</sup> Includes 12 counties in which no coal found short weight.

<sup>3</sup> Includes 9 cities in which no bread found short weight.

<sup>4</sup> Includes 11 counties in which no bread found short weight.

<sup>5</sup> Includes 3 cities in which no packages of merchandise found short weight.

Before concluding these comments on short weighing and measuring, it is desirable to mention an official practice which occasionally proved expedient in jurisdictions where the necessary funds were available.

<sup>48</sup> Median quantities weighed: State, 5,000 packages; city, 2,700 packages; county, 3,600 packages. These numbers are based on the bottom section of table 30.



Commodities were actually bought and their weight or measure then checked against standards kept at headquarters. Apropos of this practice, several respondents advised that the services of the inspectors were much more effective if their identities were unknown at the establishments where purchases were made.

Bringing together the facts on supervisory activities, it is apparent that no sound basis was provided for arriving at a general estimation of the extent that commodities were or were not sold according to proper weight or measure. As reported, short weighing or measuring appeared to be much more serious in some jurisdictions than in others. The variation may have been partly due to differences in (1) stringency of the weights and measures laws; (2) tolerances, or allowable errors; (3) administrative practices in making investigation; and (4) time and energy which the inspectors themselves devoted to the investigations.

**Prosecutions.**—Comparatively few prosecutions for violations of weights and measures laws were ordinarily disclosed. There were no prosecutions in one-fourth of the jurisdictions. Of the reports dealing with the activities of the seven State weights and measures bureaus accounted for in table 14, four separately showed less than five prosecutions during the year; less than ten prosecutions were, as a rule, made by the city weights and measures staffs, and less than four by the county staffs. The totals were greater for thickly populated jurisdictions than for those of comparatively few inhabitants.

The number of prosecutions was a poor criterion of the number of jail sentences. No jail sentences were imposed in more than three-fourths of all the jurisdictions considered (table 14). Moreover, the fines were light, considering the harm done by short weighing or measuring; the fines for violations of State weights and measures regulations in one year averaged less than \$117 per jurisdiction (median), for violation of city regulations less than \$97, and for county regulations less than \$75.

TABLE 14.—Jurisdictions distributed according to prosecutions, and fines and jail sentences imposed in 1 year for violations of weights and measures laws, ordinances, or regulations, with cumulative proportions

Prosecutions (number)	Number of—			Proportion of total jurisdictions in which prosecutions totaled not more than number stated		
	States	Cities	Counties	States	Cities	Counties
				Percent	Percent	Percent
Less than 5.....	4	35	40	57.1	50.7	71.4
5-9.....	2	9	8	85.7	63.8	85.7
10-14.....	1	6	4	100.0	72.5	92.9
15-19.....		5			79.7	92.9
20-29.....		5	1		87.0	94.6
30-39.....		1	1		88.4	96.4
40-49.....		1	1		89.9	98.2
50 to 99.....		3			94.2	98.2
100-149.....		2	1		97.1	100.0
150 or more.....		2			100.0	
Total.....	7	69	56			

## FINES

Aggregate fines	Number of—			Proportion of total jurisdictions in which fines aggregated not more than amount stated		
	States	Cities	Counties	States	Cities	Counties
				<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
\$0-\$99.99.....	3	31	32	42.9	51.7	68.1
\$100-\$199.99.....	3	7	4	85.7	63.3	76.6
\$200-\$299.99.....	1	4	5	100.0	70.0	87.2
\$300-\$399.99.....	-----	4	2	-----	76.7	91.5
\$400-\$499.99.....	-----	2	1	-----	80.0	93.6
\$500-\$999.99.....	-----	5	2	-----	88.3	97.9
\$1,000-\$1,999.99.....	-----	4	-----	-----	95.0	97.9
\$2,000 or more.....	-----	3	1	-----	100.0	100.0
Total.....	7	60	47	-----	-----	-----

## JAIL SENTENCES

Jail sentences (number)	Number of—			Proportion of total jurisdictions in which jail sentences totaled not more than number stated		
	States	Cities	Counties	States	Cities	Counties
				<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
0.....	6	49	38	100.0	87.5	80.8
1.....	-----	2	4	-----	91.1	89.4
2.....	-----	4	1	-----	98.2	91.5
3.....	-----	1	2	-----	100.0	95.8
8.....	-----	-----	1	-----	-----	97.9
11.....	-----	-----	1	-----	-----	100.0
Total.....	6	56	47	-----	-----	-----

In explanation of the few prosecutions, and the tendency of the courts to refrain from imposing jail sentences or heavy fines, three-fourths of the State weights and measures officials expressed belief that the list of practices prohibited by the relevant laws of their jurisdictions was not sufficiently inclusive. That opinion was not generally shared, however, by the city and county officials.

## Selected References

### BIBLIOGRAPHICAL

**WEIGHTS AND MEASURES REFERENCES**, compiled by Ralph W. Smith. National Bureau of Standards Miscellaneous Publication No. 103. 1930, pp. 26. Address: Superintendent of Documents, Washington, D. C. 10 cents.

Lists publications of the National Bureau of Standards on weights and measures, and books and periodicals on the history and technical aspects of the subject. Contains an index to the reports of the National Conference on Weights and Measures from the first to the twenty-first conference inclusive (1905-28).

**WEIGHTS AND MEASURES PUBLICATIONS OF GENERAL INTEREST**. Letter Circular LC 593, 1940, pp. 5, mimeo. Address: National Bureau of Standards, Washington, D. C. Free.

Lists weights and measures publications selected for their interest to nontechnical readers and for their usefulness to teachers and students.



FIGURE 6.—Extensive differences in administrative matters connected with weights and measures services, and in the details of such services, were frequently disclosed. The above diagrams provide illustrative comparisons for three cities, located in different sections of the United States; each was in the population class 300,000 to 400,000. All data relate to a 1-year period.

## GENERAL

**WEIGHTS AND MEASURES ADMINISTRATION**, by Ralph W. Smith. Handbook Series of the National Bureau of Standards No. 11. 1927, pp. 270. (Addendum: After this list of references was set in type, the National Bureau of Standards issued Handbook No. 26 as a revision of No. 11. This new publication, 292 pages, also prepared by Mr. Smith, bears the same title. Address: Superintendent of Documents, Washington, D. C., 75 cents.)

A comprehensive handbook for weights and measures officials discussing the functions of regulatory departments and their general administrative operation. Discusses in considerable detail the mechanical and supervisory activities of sealers. Contains information on Federal laws and the model State law on weights and measures prepared by the National Conference on Weights and Measures.

**CHECK YOUR WEIGHTS AND MEASURES**. Bulletin No. 9. 1941, pp. 19, mimeo. Address: Consumer Division, Office of Price Administration and Civilian Supply, Washington, D. C. Free.

Gives suggestions for improving your community and State program of weights and measures protection. Contains a brief checklist of the provisions of the Model State Law on Weights and Measures.

**ONE DAY WITH A WEIGHTS AND MEASURES OFFICIAL**. Consumers' Guide, Vol. IV, No. 19. December 1937, pp. 3-6, illus. Out of print. Available in some libraries.

A description of the activities of the staff of New York City's Weights and Measures Division.

**CHECKING YOUR WEIGHTS AND MEASURES**. Consumers' Guide, Vol. III, No. 21. November 1936, pp. 3-8, illus. Out of print. Available in some libraries.

Calls attention to the importance of weights and measures officials in the protection of the consumer, discusses various phases of activity of local and State agencies, and suggests precautionary buying practices. Explains the functions of the National Bureau of Standards in securing uniform and cooperative action in the administration of weights and measures throughout the country.

**CHECKWEIGHING FOR FULL MEASURE**. Consumers' Guide, Vol. V, No. 15, January 1939, pp. 3-5, illus. Out of print. Available in some libraries.

Growers and workers join hands with consumers in seeking standards of accuracy both in measuring devices and in the people who use them.

**WEIGHED—AND FOUND WANTING**, by Robert Littell. Reader's Digest, March 1938, pp. 25-27. Address: Reader's Digest, Pleasantville, New York. 25 cents.

A description of some of the methods used in giving short weight or measure and the activities of weights and measures officials in combating them.

**WEIGHTS AND MEASURES STANDARDIZATION**. Hearings before the Committee on Coinage, Weights and Measures, House of Representatives, 75th Congress, 1st session, on H. R. 7869. August 12, 1937, pp. 17. Copies of this hearing may be consulted in some public libraries having collections of public documents.

Copies may be secured as long as the supply lasts by writing your Congressman or Senator.

This bill, if adopted, would set up definitions for certain fundamental units of weight and measure, namely the inch and pound. These hearings contain a brief statement on the history of weights and measures in the United States by Dr. Lyman J. Briggs, Director of the National Bureau of Standards.

**STANDARD OF LENGTH, MASS, AND TIME.** Letter Circular LC449. 1935, pp. 8, mimeo. Address: National Bureau of Standards, Washington, D. C. Free.

Contains general information on the standards of length, mass, and time used in the United States.

**THE INTERNATIONAL METRIC SYSTEM.** National Bureau of Standards Miscellaneous Publications M3. 1936. Address: Superintendent of Documents, Washington, D. C. 30 cents.

A chart giving graphic comparisons between the units of the metric system and the customary system of weights and measures. Size: 28½ by 44 inches, printed in colors.

**PROCEEDINGS OF THE NATIONAL CONFERENCE ON WEIGHTS AND MEASURES.** A National Conference on Weights and Measures is held annually at the National Bureau of Standards in Washington. Local, State, and national officials participate in this conference. Copies of the available proceedings may be secured from the Superintendent of Documents at Washington, D. C., at the prices indicated below.

Publication No.	Year	Price	Publication No.	Year	Price
		<i>Cents</i>			<i>Cents</i>
M7.....	1908	15	M74.....	1926	60
M8.....	1910	15	M80.....	1927	45
M12.....	1914	20	M87.....	1928	35
M14.....	1916	35	M101.....	1929	30
M41.....	1919	20	M116.....	1930	35
M43.....	1920	20	M129.....	1931	50
M48.....	1921	20	M157.....	1936	20
M51.....	1922	15	M159.....	1937	15
M55.....	1923	30	M161.....	1938	30
M59.....	1924	35	M164.....	1939	25
M70.....	1925	50			

### HISTORICAL

**HISTORY OF THE STANDARD WEIGHTS AND MEASURES OF THE UNITED STATES**, by Louis A. Fischer. National Bureau of Standards Miscellaneous Publication 64. 1925, pp. 34, illus. Address: Superintendent of Documents, Washington, D. C. 15 cents.

A well-illustrated history of legislation relating to the fundamental units of weight and measure used in the United States.

**"WE, THE PEOPLE—"** Consumers' Guide, Vol. V, No. 13. December 1938, pages 11-12. Out of print. Available in some libraries.

This article traces what has been done to secure national uniformity of standard weights and measures.

**WEIGHTS AND MEASURES IN CONGRESS**, by Sarah A. Jones. National Bureau of Standards Miscellaneous Publication M122. 1936, pp. 19. Address: Superintendent of Documents, Washington, D. C. 5 cents.

Presents a detailed account of the steps taken by the Federal Government up to 1838 to secure uniformity in weights and measures. It is an historical account of the various plans and proposals made in or to Congress on this subject, based on actual records of Congress and other original documents.

See also the publication entitled **THE STORY OF WEIGHTS AND MEASURES** in the section, Educational Materials—General.

## SURVEYS

**CHAIN STORES: SHORT WEIGHING AND OVER WEIGHING IN CHAIN AND INDEPENDENT GROCERY STORES.** Report of the Federal Trade Commission. Senate Document No. 153, 72d Congress, 2d session. 1933, pp. 42. Address: Superintendent of Documents, Washington, D. C. 5 cents.

For the purpose of this investigation, five bulk articles were purchased for weighing from chain and independent stores so that the extent to which these stores short weigh commodities, and whether this practice occurs more often in chain than in independent stores, could be determined.

## EDUCATIONAL MATERIALS—GENERAL

**THE STORY OF WEIGHTS AND MEASURES**, prepared by the Committee on Materials of Instruction of the American Council on Education, with the cooperation of the subcommittee on Political Education of the American Political Science Association. Achievements of Civilization Series No. 3. 1932, pp. 32, illus. Address: Committee on Materials of Instruction of the American Council on Education, 5835 Kimbark Avenue, Chicago, Ill. 10 cents. Special prices on quantities of 25 or more.

A pamphlet for school use discussing the importance of weights and measures, and including a brief historical review of weights and measures from ancient times to the present day. Compares the metric system of measuring with the common English system used in the United States, and considers the future of weights and measures in America. Bibliography.

**RADIO PROGRAMS.** The following bureaus mimeograph the scripts used in their regular radio broadcasts on weights and measures: (1) Weights and Measures Bureau, State Department of Agriculture and Markets, Albany, N. Y. (2) Division of Weights and Measures, State Department of Agriculture, Austin, Tex. (3) Bureau of Weights and Measures, City of New York, New York, N. Y. Teachers and leaders of consumer study groups interested in the subject of weights and measures may wish to communicate with these agencies with regard to the possibility of securing copies for their consumer information files. Of interest in this connection is an address, "The Value of Weights and Measures Radio Programs" by A. Edward Snyder, Inspector of Weights and Measures, City of Terre Haute, Ind., included in the "Report of the Twenty-ninth National Conference on Weights and Measures," Miscellaneous Publication of the National Bureau of Standards

M164. Copies of this report may be secured from the Superintendent of Documents, Washington, D. C. 25 cents.

**COMMITTEE ON EDUCATION, NATIONAL CONFERENCE ON WEIGHTS AND MEASURES.** The Thirtieth National Conference on Weights and Measures, meeting in Washington, June 1940, created a Committee on Education. This Committee assumed the duties formerly carried on by a Committee on Publicity. A report by this Committee was included in the Report of the Thirtieth National Conference on Weights and Measures. Information on how to secure this report may be obtained from the Superintendent of Documents, Washington, D. C. Information on subsequent activities of the Committee on Education may be secured from the National Bureau of Standards, Washington, D. C.

## CONTAINERS

**STANDARDIZATION OF PACKAGES.** National Bureau of Standards Miscellaneous Publication M165. 1940, pp. 128. Address: Superintendent of Documents, Washington, D. C. 10 cents.

Contains the report of the Committee on Standardization of Packaged Goods presented before the Twenty-ninth National Conference on Weights and Measures. Also contains addresses of representatives of business and consumer interests commenting on the need of standards for certain types of packages frequently used in the sale of consumer goods.

**LEGAL WEIGHTS PER BUSHEL FOR VARIOUS COMMODITIES.** National Bureau of Standards Circular C425. 1940, pp. 12. Address: Superintendent of Documents, Washington, D. C. 5 cents.

Contains information on the bushel weights established by both Federal and State laws as well as other legislation having a direct bearing on this subject.

**CONTAINERS FOR FRUITS AND VEGETABLES,** by L. C. Carey, Agricultural Marketing Service. U. S. Department of Agriculture. Farmers' Bulletin No. 1821. 1939, pp. 63, illus. Address: U. S. Department of Agriculture, Washington, D. C.

Summarizes briefly the provisions of the Standard Barrel Act of 1915 and the Standard Containers Acts of 1916 and 1928. Discusses the importance of standardization and describes the containers used for a wide variety of fruits and vegetables.

**SYNOPSIS OF FEDERAL AND STATE LAWS RELATING TO LEGAL OR STANDARD WEIGHTS PER BUSHEL AND THE SALE OF FRUITS AND VEGETABLES.** 1938, pp. 19, mimeo. Address: Agricultural Marketing Service, U. S. Department of Agriculture, Washington, D. C. Free.

Quotes pertinent excerpts from the State and Federal laws bearing on the sale of fruits and vegetables with special reference to weights, markings, and containers.

**CALLING CANS TO ORDER.** Consumers' Guide, Vol. VI, Number 6, August 1939, pages 6-9, illus. Out of print. Available in some libraries.

A discussion of the problem of confusion in can sizes, as brought out by the testimony before the Temporary National Economic Committee. Con-

siders also the report of the Committee on Standardization of Packaged Goods of the Weights and Measures Conference, and the activities of the canning industry relative to this problem.

**HOW CANS COMPARE.** Consumers' Guide, Vol. III, No. 18. October 1936, pp. 10-18, illus. Out of print. Available in some libraries.

Reviews the efforts of the canning industry in reducing the number of can sizes, and outlines the present status of can size standardization.

**STANDARD METAL CONTAINER ACT OF 1937.** Hearing before the Committee on Coinage, Weights and Measures, House of Representatives, 75th Congress, 3d session, on H. R. 6964. 1938, pp. 190. Copies may be consulted in many public libraries having a collection of public documents. Your Congressman or Senator will be glad to send you a copy as long as the supply lasts.

The purpose of this bill is "to fix standards of dimension and capacity for metal containers for canned fruit and vegetables, and milk in order to prevent fraud and deception in containers." This bill, if passed, would have greatly reduced the number of can sizes used in packing the products mentioned.

## SPECIFICATIONS

**SPECIFICATIONS, TOLERANCES, AND REGULATIONS FOR COMMERCIAL WEIGHING AND MEASURING DEVICES.** National Bureau of Standards Handbook H22. 1938, pp. 105. Address: Superintendent of Documents, Washington, D. C. 50 cents.

Contains the specifications, tolerances, and regulations for guidance of officials adopted by the National Conference on Weights and Measures. Recommendations with regard to these matters are prepared by the Conference Committee on Specifications and Tolerances in cooperation with the National Bureau of Standards.

**WEIGHING SCALES. FEDERAL SPECIFICATION NO. AAA-S-121A.** December 4, 1934, pp. 20. Address: Superintendent of Documents, Washington, D. C. 5 cents.

Federal specifications are prepared primarily for use of governmental agencies, but may be purchased by individuals from the Superintendent of Documents. Detailed requirements as to materials, workmanship, and construction features are outlined for general weighing scales.

**PRESCRIPTION SCALES. FEDERAL SPECIFICATION NO. AAA-S-91.** September 27, 1935, pp. 8. Address: Superintendent of Documents, Washington, D. C. 5 cents.

Federal specifications are prepared primarily for use of governmental agencies, but may be purchased by individuals from the Superintendent of Documents. Detailed requirements as to materials, workmanship, and construction features are outlined for prescription scales.

## WEIGHTS AND MEASURES LAWS

**THE MODEL STATE LAW ON WEIGHTS AND MEASURES.** Letter Circular LC 620. 1940, pp. 46, mimeo. Address: National Bureau of Standards, Washington, D. C. Free.

This bulletin reproduces three forms of the model State law on weights and measures, as adopted by the National Conference on Weights and Meas-



ures and recommended by the National Bureau of Standards. The three forms are for use by States differing in size of population. The law is adaptable for use as a city ordinance.

**FEDERAL AND STATE LAWS RELATING TO WEIGHTS AND MEASURES**, compiled by William Parry. National Bureau of Standards Miscellaneous Publication M20. 1926, pp 796. Address: Superintendent of Documents, Washington, D. C. \$2.30.

A compilation of the weights and measures laws of the Federal Government, the various States, Territories, and insular possessions.

# Appendix A: Essentials of Model Law

(Form No. 2<sup>49</sup>)

To facilitate understanding of the model law the essential elements are herewith outlined. However, in preparing legislation on the subject of weights and measures the model law itself should be used.<sup>50</sup>

SEC. 1. The weights and measures received from the Federal Government, by virtue of joint resolutions of Congress approved June 18, 1836, and July 27, 1866, and such new weights and measures as shall be received from the Federal Government as standard weights and measures, shall be the State standards of weights and measures.

SEC. 2. In addition to the State standards, the purchasing division of the State shall furnish to the weights and measures division one complete set of copies, to be known as office standards, and such additional weights, measures, and apparatus for use of inspectors to be known as working standards. The supplementary standards are to be checked for accuracy at least once each year.

SEC. 3. A State superintendent (or commissioner) of weights and measures shall be appointed by the governor, with the advice and consent of the Senate. The superintendent shall hold office for 5 years. A deputy superintendent of weights and measures and inspectors of weights and measures shall be appointed from eligible lists prepared by the civil-service board. If the State does not have a civil-service board additional provisions of this section safeguard the rights of employees in dismissal cases.

SEC. 4. The State superintendent shall give bond in the amount of \$5,000, and the deputy superintendent in the amount of \$1,000, for the faithful performance of their duties.

SEC. 5. The State superintendent shall carefully preserve the State standards of weights and measures, and for purposes of certification at least once in 10 years submit same to the National Bureau of Standards. He is required to render an annual report to the governor.

SEC. 6. The State superintendent, or his assistants, shall at least once in 5 years check for accuracy the office standards in counties or cities where sealers of weights and measures have been appointed by local authority. At least once in 2 years the superintendent or his assistants shall check the accuracy of the working standards of such counties and cities. The superintendent shall from time to time issue regulations for the guidance of county and city sealers and at least once every 2 years inspect their work. All apparatus meeting the regulations issued by the State superintendent shall be considered correct, and the other incorrect.

SEC. 7. The State superintendent shall have general supervision of all weighing and measuring equipment offered for sale, sold, or in use in the State. He, or his assistants, shall at least once each year test all weighing and measuring equipment used by State institutions.

SEC. 8. The State superintendent shall check the accuracy of weighing and measuring equipment and have direct supervision of weighing and measuring activities in all parts of the State where a local city or county sealer is not employed under the provisions of this law. He shall also check the weight of packaged goods. Inspections shall be made at least twice each year. Violators of the act are to be prosecuted.

SEC. 9. Whenever tested equipment corresponds to the standards used by the State superintendent it shall be sealed or marked as being approved.

SEC. 10. The State superintendent shall condemn and seize, and may destroy, incorrect equipment which cannot be satisfactorily repaired. Equipment which may be repaired shall be marked "Condemned for Repairs." If such equipment is not repaired within a reasonable time it may be confiscated.

<sup>49</sup> See text page 20.

<sup>50</sup> See footnote 25, page 20.

SEC. 11. The powers and duties given to the State superintendent of weights and measures by sections 8, 9, and 10 are hereby also given to his deputy and inspectors.

SEC. 12. A sealer shall be employed in every county having a population of 20,000 or more inhabitants, exclusive of any city within its boundaries having a population of 25,000 inhabitants. County sealers are to be appointed from eligible lists prepared by the civil-service board. If no such agency exists, certain rights of employees in dismissal cases are set forth.

SEC. 13. A sealer shall be employed in cities of not less than 25,000 population. The same civil-service or tenure provisions which apply to county sealers (section 12) apply to city sealers.

SEC. 14. Two or more counties, or a county and a city situated therein, may together, upon written consent of the State superintendent, form a single weights and measures district.

SEC. 15. The county or city sealer of weights and measures shall furnish a bond of \$1,000 for faithful performance of his duties.

SEC. 16. The board of county commissioners of each county or the council of each city required to appoint a sealer by this act must provide proper testing equipment for the use of sealers.

SEC. 17. Where not otherwise provided by law, the county or city sealer shall have the same powers and duties within his jurisdiction as are given to the State superintendent in sections 8, 9, and 10.

SEC. 18. Local sealers shall keep accurate records of their work and render annual reports to both the local governing body and the State superintendent.

SEC. 19. State and local weights and measures officials are authorized to make arrests, and to seize illegal equipment or any products sold or offered for sale in violation of law.

SEC. 20. Any person who shall hinder a weights and measures official in performance of his duties shall be subject to a fine of not less than \$20 or more than \$200, or imprisonment for not more than 3 months, or both the fine and imprisonment.

SEC. 21. Anyone who shall impersonate a weights and measures official, or who shall counterfeit a weights and measures seal, shall be guilty of a misdemeanor, and on conviction shall be punished by a fine of not less than \$100 or more than \$500, or by imprisonment for not more than 1 year, or both fine and imprisonment.

SEC. 22. Liquid commodities, unless intended for immediate consumption on the premises, must be sold only by weight or liquid measure; commodities not considered as liquid, by measure of length, weight, or numerical count. This section shall not be construed to prevent the sale of fruits, vegetables, and other dry commodities in the designated standard barrel (sec. 31); or the sale of berries and small fruits in the designated boxes (sec. 32); or the sale of vegetables usually sold by the head or bunch; or of foodstuffs put up in original packages.

SEC. 23. Coal, coke, or charcoal must not be sold or offered for sale other than by weight. Duplicate delivery tickets, specifying the net weight of each load, and the name of the dealer and purchaser, shall be made out in ink or other indelible substance. One ticket shall be surrendered to the weights and measures official upon demand, and the other delivered to the purchaser.

SEC. 24. Any packaged commodity kept for the purpose of sale, offered for sale, or sold must be plainly labeled with the net quantity of contents in terms of weight, measure, or numerical count. Reasonable tolerances are to be specified.

SEC. 25. To keep for the purpose of sale, offer for sale, or sell any commodity in package form is unlawful if its container is so made, formed, or filled, or if it is so wrapped as to mislead the purchaser as to the quantity of contents. Containers must also meet the standards of fill prescribed in regulations issued by the State superintendent of weights and measures.

SEC. 26. To keep for the purpose of sale, offer for sale, or sell any textile commodity on a spool, or in a container, or on a bolt, or in any similar manner, is unlawful unless plainly labeled with its net weight or measure.

SEC. 27. Butter or oleomargarine must be sold or offered for sale by weight only. Units specified were of one-quarter pound, one-half pound, 1 pound, 1½ pounds, or multiples of 1 pound. Each shall bear a conspicuous statement of its true net weight.

SEC. 28. Meat, meat products, or poultry, unless intended for immediate consumption on the premises, must not be sold or offered for sale other than by weight.

SEC. 29. The standard loaf of bread shall be 1 pound avoirdupois weight. All loaves shall be of one of the following standard weights: 1 pound, one-half pound,  $1\frac{1}{2}$  pounds, or multiples of 1 pound. Reasonable tolerances shall be provided. The provisions of this section shall not apply to biscuits, buns, crackers, rolls, or to stale bread when sold as such.

SEC. 30. Bottles used for the sale of milk or cream shall be of the capacity of  $\frac{1}{2}$  gallon, 3 pints, 1 quart, 1 pint,  $\frac{1}{2}$  pint, and 1 gill. (It is recommended that the words "3 pints" be deleted to bring this section into conformance with the latest specifications adopted by the National Conference on Weights and Measures.) Each bottle must be permanently marked with its capacity and the name or mark of its manufacturer. Each manufacturer must furnish a bond of \$1,000 before he may sell milk bottles within the State. Violators of these regulations shall suffer a penalty of \$500 which shall be deducted from his bond.

SEC. 31. Detailed specifications are set up for (a) a standard barrel for fruits, vegetables, and other dry commodities, (b) a standard barrel for cranberries. Products of this type must be sold in standard barrels or subdivisions thereof known as the third, half, or three-quarters barrel. Exceptions are made for barrels containing commodities sold exclusively by weight or numerical count, and barrels for use in shipments to foreign countries and made according to their specifications.

SEC. 32. Berries or other small fruits must not be sold or offered for sale except by weight or standard dry measure (1 quart, 1 pint,  $\frac{1}{2}$  pint). It shall be unlawful to procure, offer for sale, sell, or give away, baskets or other containers for berries or other small fruits in sizes other than those specified above.

SEC. 33. The following terms are defined:

Gallon	231 cubic inches.
Bushel (dry measure)	2150.42 cubic inches.
Barrel of flour	196 pounds avoirdupois weight.
Barrel of ale, porter, and other similar fermented liquor.	31 gallons.
Ton	2,000 pounds avoirdupois weight.
Cord of wood, ranked	128 cubic feet:

SEC. 34. Wheat flour shall be packed in units of one of the following weights: 196, 98, 49,  $24\frac{1}{2}$ ,  $12\frac{1}{4}$ , 6, 5, 4, 3, and 2 pounds, and 1 pound, avoirdupois weight.

SEC. 35. To misrepresent the price of a commodity or service sold or offered for sale, or to represent its price or quantity tending to mislead an actual or a prospective customer, is unlawful.

SEC. 36. The net weight of a commodity must be employed in making a sale.

SEC. 37. The law prohibits: The use of false weighing and measuring equipment; unsealed weighing and measuring equipment; the disposal of condemned equipment contrary to law; the removal of any tag attached by any weights and measures official; the sale or offering for sale of a commodity, of less quantity than represented; and the use of a weighing and measuring device which is so placed that it cannot be accurately read by customers. The penalty for first violation of these regulations shall be a fine of not less than \$20 or more than \$200, or imprisonment for not more than 3 months, or both fine and imprisonment. Penalty for a second or subsequent conviction shall be a fine of not less than \$50 or more than \$500, or by imprisonment for not more than one year, or by both fine and imprisonment.

SEC. 38. Certain terms are defined: "person," "weights, measures, or weighing and measuring devices," "sell," or "sale."

SEC. 39. The constitutionality of the remaining provisions shall not be affected, if any of the above provisions is declared unconstitutional.

# Appendix B: Survey Schedules

## Survey of State and Local Weights and Measures Administration

Consumers' Counsel Division, U. S. Department of Agriculture

Survey project endorsed by the Twenty-seventh National Conference on Weights and Measures meeting in Washington, D. C., June 1, 1937.

### Schedule I: A LIST FOR CHECKING THE FEATURES OF YOUR WEIGHTS AND MEASURES LAW AGAINST THE MODEL WEIGHTS AND MEASURES LAW ADOPTED BY NATIONAL CONFERENCE ON WEIGHTS AND MEASURES

**Notes:**

(1) Any information you give us in response to the following questions will be held strictly confidential and will be used only as part of averages of replies from many other sources unless you grant special permission.

(2) (a) Local officials operating exclusively under State laws and having no local ordinances should return Schedule I without filling it in, as your State director of weights and measures will furnish us with an analysis of your State law. (b) Local officials operating under both State laws and local ordinances should check only the features of their local ordinances on this form. (c) State officials should check only the provisions of their State law.

(3) Please read through the entire questionnaire before filling in any part of it. Where "yes" or "no" answers are provided, circle the correct answer.

Name of your weights and measures district -----

Underline type of district: (a) city (b) county (c) State

Underline legal basis of operation: (a) State law (b) local ordinance (c) State law supplemented by local ordinance

Does your weights and measures law provide, as does the model law, that:

Circle correct answer

- Yes No 1. All commercial weighing and measuring devices must be tested at least twice a year? If not, what are provisions of law? -----
- Yes No 2. Your standard weights and measures must be *proved* by State standards at least every 5 years? If not, what are provisions of law? -----
- Yes No 3. State officials must inspect your standard weights and measures at least every 2 years? If not, what are provisions of law? -----
- Yes No 4. The director of weights and measures may issue regulations for the enforcement of the weights and measures law including specifications and tolerances for all weights, measures, and weighing and measuring devices?
- Yes No 5. New weighing and measuring equipment must be inspected before being placed in use?
- Yes No 6. Approved weighing and measuring devices must be sealed or stamped so that the public may readily recognize approved equipment?
- Yes No 7. Weights and measures officials may condemn and seize equipment which is beyond repair, or which a proprietor fails to have repaired?
- Yes No 8. Inspectors may arrest violators of weights and measures law?
- Yes No 9. The penalty for first conviction is a fine of not less than \$20 or more than \$200, or imprisonment for not more than 3 months, or both? If not, what penalty is provided? -----
- Yes No 10. Do you consider this adequate? Yes No  
The penalty for a subsequent conviction is a fine of not less than \$50 or more than \$500, or imprisonment for not more than one year, or both? If not, what penalty is provided? -----
- Yes No 11. Do you consider this adequate? Yes No  
All packaged commodities must be plainly and conspicuously labeled with their net contents?
- Yes No 12. The sale of any packaged commodity must be prohibited if its container is so made, formed, or filled, or if it is so wrapped, as to mislead the purchaser?
- Yes No 13. Duplicate weight tickets, written in ink or indelible pencil, and indicating net weights, must be delivered with each load of coal, coke, or charcoal?
- Yes No 14. Bread must be sold in the following standard units: standard loaf of 1 pound; or units of ½ pound, 1½ pounds, or multiples of 1 pound? If not, what are provisions of law? -----

- Yes No 15. Butter or oleomargarine must be sold only in units of  $\frac{1}{4}$  pound; 1 pound;  $1\frac{1}{2}$  pounds; or multiples of 1 pound? If not, what are provisions of law? -----
- Yes No 16. Milk or cream must be sold in standard containers of  $\frac{1}{2}$  gallon; 3 pints; 1 quart; 1 pint;  $\frac{1}{2}$  pint; or 1 gill? If not, what are provisions of law? -----
- Yes No 17. Coal, coke, or charcoal must be sold in a standard unit of a ton of 2,000 pounds avoirdupois weight? If not, what are provisions of law? -----
- Yes No 18. Wood must be sold in a standard unit of a cord of 128 cubic feet? If not, what are provisions of law? -----
- Yes No 19. Berries and small fruits must be sold by weight or in containers of 1 quart, 1 pint, or  $\frac{1}{2}$  pint, standard dry measure? If not, what are provisions of law? -----
20. If your law establishes standard units for commodities other than those in questions 14 to 19, inclusive, indicate the commodity and prescribed units below.  
 (Other commodity) -----  
 (Other commodity) -----
- Yes No 21. Standard barrels for fruits and vegetables other than cranberries must have a capacity of 7,056 cubic inches? If not, indicate the standard required -----
- Yes No 22. Administrative officers of the department must be bonded for at least \$1,000 for the faithful performance of their duties? Amount of bond? -----
- Yes No 23. All inspectors must be chosen from civil service lists? -----
- Yes No 24. No member of the department shall be discharged or reduced in pay or position except for inefficiency, or incapacity, or other just cause, and then only after presentation of written charges and a hearing? -----

Please give your name -----  
 Title -----  
 Address -----  
 Date -----

Schedule II: ADMINISTRATION OF WEIGHTS AND MEASURES LAW

Note:

- (1) Any information you give us in response to the following questions will be held strictly confidential and will be used only as part of averages of replies from many other sources unless you grant special permission.
- (2) Please read through the entire questionnaire before filling in any part of it. Where "yes" or "no" answers are provided, circle the correct answer.
- (3) The information given below should cover the most recent annual or fiscal year for which data are complete.

Name of your weights and measures district -----  
 Underline type of district: (a) city (b) county (c) State -----  
 Underline legal basis of operation: (a) State law (b) local ordinance (c) State law supplemented by local ordinance -----  
 Dates covered by this report ----- to -----

1. STAFF:

- (a) Number of full-time weights and measures inspectors employed -----  
 (b) Number of persons on administrative staff -----

2. FINANCES:

- (a) Total budget \$-----  
 (b) Amount of fees collected if any \$-----  
 (c) Are fees segregated for support of your department? Yes No  
 (d) Is budget sufficient to care for all activities required by law? Yes No  
 (e) Estimated total budget required to meet such requirements \$-----  
 (f) Is money provided for the purchase of commodities by weights and measures inspectors? Yes No

3. SUMMARY OF ACTIVITIES:

- (A) Testing Activities:  
 (a) Approximate number of establishments in your district using weighing and measuring equipment -----  
 (b) Number of these establishments visited for testing purposes -----  
 (c) Total number of official visits made to these establishments -----

NOTE.—A form for listing other information on testing activities is provided on the other side of this card.

- (B) Supervisory Activities—General Summary:  
 (a) Number of supervisory investigations or check ups made -----  
 (b) Number of instances of short weighing or measuring discovered -----
- (C) Supervisory Activities—Itemized Report:  
 (a) Number of loads of coal weighed ----- Number found short weight -----  
 (b) Number of loaves of bread weighed ----- Number found short weight -----  
 (c) Number of commodity packages put up by manufacturers or retailers checked for net weight of contents ----- Number of short weight packages found -----

3. SUMMARY OF ACTIVITIES—Continued.

(D) Prosecutions:

- (a) Number made \_\_\_\_\_
- (b) Total amount of fines imposed \_\_\_\_\_
- (c) Number of jail sentences \_\_\_\_\_

4. Do you feel that the list of prohibited acts included in the penalty section of your law is sufficiently inclusive? Yes No

*Summary of testing activities*

Write in "No Record" or "None Tested" as the case may be in the first column where you cannot give figures.

Please fill in totals when data are not available on specific types of instruments.

Type of apparatus	Total number examined	Total number approved without adjusting	Number approved after adjusting	Number condemned for repair	Number confiscated and destroyed	Approximately how frequently are you able to make a complete check of this type of equipment in your jurisdiction
<b>I. Scales</b> .....						
a. Large capacity (over 400 lbs.).....						
b. Small capacity (400 lbs. maximum).....						
c. Person weighers.....						
d. Prescription.....						
Total scales.....						
<b>II. Weights</b> .....						
a. Avoirdupois.....						
b. Prescription.....						
Total weights.....						
<b>III. Pumps and retail-type meters</b> .....						
a. Gasoline and lubricating oil.....						
b. Other.....						
Total pumps and retail-type meters.....						
<b>IV. Miscellaneous apparatus</b> .....						
a. Liquid capacity measures.....						
b. Milk bottles.....						
c. Lubricating oil bottles.....						
d. Dry capacity measures.....						
e. Linear measures.....						
f. Fabric measuring devices.....						
g. Taximeters.....						
h. Calibrated vehicle tanks (fuel oil and gasoline).....						
i. Fuel oil meters.....						
j. Wholesale-type gasoline meters.....						
k. Gas meters (not gasoline).....						
l. Electricity meters.....						
Total miscellaneous.....						
Grand total.....						

Please give your name \_\_\_\_\_  
 Title \_\_\_\_\_  
 Address \_\_\_\_\_  
 Date \_\_\_\_\_

## Appendix C: Supplementary Tables

TABLE 15.—Average budgetary allowance for weights and measures supervision, and average per capita, in 1 year in stated number of jurisdictions, by population

Population (thousands)	Average amount provided in—			Average per capita amount provided in—			Number of—		
	States	Cities	Counties	States	Cities	Counties	States	Cities	Counties
	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>	<i>Dollars</i>			
Less than 20.....		1, 200			0. 08			1	
20-29.9.....			1, 026			0. 04			7
30-39.9.....		1, 512	2, 460		. 04	. 07		1	8
40-49.9.....		3, 133	2, 203		. 07	. 05		7	9
50-99.9.....		3, 123	2, 628		. 04	. 04		18	11
100-149.9.....		5, 276	7, 514		. 04	. 06		9	5
150-199.9.....		7, 120	7, 208		. 04	. 05		5	4
200-249.9.....		14, 684	5, 806		. 07	. 02		4	4
250-499.9.....	16, 500	14, 595	5, 931	0. 06	. 04	. 02	3	13	7
500-999.9.....	15, 908	28, 872	31, 320	. 02	. 04	. 06	4	5	2
1,000-1,999.9.....		21, 500	29, 480		. 02	. 02		1	1
2,000-2,999.9.....	21, 500	48, 000	80, 524	. 01	. 02	. 03	2	1	1
3,000-3,999.9.....	50, 470			. 02			2		
4,000-4,999.9.....	42, 929			. 02			1		
5,000-9,999.9.....	42, 500	186, 160		. 01	. 02		2	1	
Average.....	27, 500	12, 310	6, 430	. 02	. 05	. 04			
Total.....							14	66	59

TABLE 16.—Average size of staff of weights and measures administrative agencies in stated number of jurisdictions, by budgetary allowance for 1 year

Amount in budget	Average size of staff in—			Number of—		
	States	Cities	Counties	States	Cities	Counties
	<i>Persons</i>	<i>Persons</i>	<i>Persons</i>			
Less than \$2,500.....		1. 7	1. 6		18	28
\$2,500-\$4,999.....		2. 3	2. 0		16	16
\$5,000-\$7,499.....		2. 5	2. 8		4	4
\$7,500-\$9,999.....	5. 0	3. 7	2. 0	2	6	1
\$10,000-\$19,999.....	5. 3	6. 8	4. 7	4	11	6
\$20,000-\$29,999.....	10. 3	11. 6	9. 5	3	7	2
\$30,000-\$39,999.....	5. 0	12. 0		1	1	
\$40,000-\$49,999.....	16. 0	16. 0	14. 0	1	1	1
\$50,000-\$59,999.....	15. 0	20. 0		2	1	
\$60,000 or more.....	27. 0	85. 0	39. 0	1	1	1
Average.....	10. 0	5. 9	3. 2			
Total.....				14	66	59



TABLE 17.—Average size of staff of weights and measures administrative agencies, and average size per 100,000 population, in stated number of jurisdictions, by population

Population (thousands)	Average size of staff in—			Average size of staff per 100,000 population in—			Number of—		
	States	Cities	Counties	States	Cities	Counties	States	Cities	Counties
Less than 20	Persons	Persons 2.0	Persons 1.0	Persons	Persons 13.3	Persons 6.2		1	1
20-29.9			1.1			4.9			7
30-39.9		1.7	1.6		5.6	4.6		3	8
40-49.9		1.6	1.6		2.7	3.7		7	10
50-99.9		2.1	1.8		3.0	2.8		21	13
100-149.9		2.4	3.2		2.0	2.6		11	6
150-199.9		4.2	3.0		2.5	1.8		6	5
200-249.9		7.0	2.8		3.4	1.2		4	4
250-499.9	4.0	6.1	3.1	1.2	1.7	1.0	3	15	7
500-999.9	5.2	13.2	10.5	.8	1.8	2.0	4	5	2
1,000-1,999.9	7.0	12.0	12.0	.6	1.2	.8	2	1	1
2,000-2,999.9	9.7	16.0	39.0	.3	.8	1.6	3	1	1
3,000-3,999.9	11.0	46.0		.3	1.3		3	1	
4,000-4,999.9	16.0			.4			1		
5,000-9,999.9	13.0	85.0		.2	1.1		3	1	
10,000-14,999.9	12.0			.1			1		
Average	8.8	5.9	3.1	.5	2.6	3.0			
Total							20	77	65

TABLE 18.—Average number of establishments having weighing and measuring equipment in stated number of jurisdictions, by population

Population (thousands)	Average number in—			Number of—		
	States	Cities	Counties	States	Cities	Counties
Less than 20	Establishments	Establishments 225	Establishments 400		1	1
20-29.9			413			6
30-39.9		247	819		3	8
40-49.9		494	697		8	10
50-99.9		792	1,029		20	12
100-149.9		1,425	2,824		9	5
150-199.9		2,807	2,700		5	3
200-249.9		2,699	3,832		4	4
250-499.9	4,000	5,074	6,551	3	11	7
500-999.9	6,000	9,935	8,500	1	5	1
1,000-1,999.9	12,000	10,580	7,410	1	1	1
2,000-2,999.9	42,500	7,000	35,000	2	1	1
Average		16,429	2,669			
Total				7	68	59

TABLE 19.—Jurisdictions distributed according to units of each specified type of apparatus officially examined in 1 year, with cumulative proportions

## SCALES

Units examined (number)	Number of—			Proportion of total jurisdictions in which units examined totaled not more than number stated		
	States	Cities	Counties	States	Cities	Counties
Less than 500.....		10	8	<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
500-999.....		8	14		15.9	13.6
1,000-1,999.....	3	14	16	30.0	28.6	37.3
2,000-2,999.....		7	3	30.0	50.8	64.4
3,000-3,999.....		5	7	30.0	61.9	69.5
4,000-4,999.....		5	2	30.0	69.8	81.4
5,000-9,999.....	3	6	6	60.0	77.8	84.7
10,000-19,999.....		7	1	60.0	87.3	94.9
20,000-29,999.....	4	1	1	100.0	98.4	96.6
30,000 or more.....			1		100.0	98.3
Total.....	10	63	59			100.0

## WEIGHTS

Less than 500.....		4	6		7.1	10.5
500-999.....	1	7	9	12.5	19.6	26.3
1,000-1,999.....	3	17	14	50.0	50.0	50.9
2,000-2,999.....		3	11	50.0	55.4	70.2
3,000-3,999.....		4	4	50.0	62.5	77.2
4,000-4,999.....		4	2	50.0	69.6	80.7
5,000-9,999.....	1	8	7	62.5	83.9	93.0
10,000-19,999.....	2	5	2	87.5	92.9	96.5
20,000-29,999.....	1	1	1	87.5	94.7	98.2
30,000 or more.....	1	3	1	100.0	100.0	100.0
Total.....	8	56	57			

## PUMPS AND RETAIL-TYPE METERS

Less than 500.....		16	9		25.4	15.0
500-999.....	1	17	15	9.1	52.4	40.0
1,000-1,999.....		15	15	9.1	76.2	65.0
2,000-2,999.....	1	6	8	18.2	85.7	78.3
3,000-3,999.....	1		3	27.3	85.7	83.3
4,000-4,999.....		1	4	27.3	87.3	90.0
5,000-9,999.....	2	7	5	45.5	98.4	98.3
10,000-19,999.....	6	1		100.0	100.0	98.3
20,000-29,999.....			1			100.0
Total.....	11	63	60			

## MISCELLANEOUS APPARATUS

Less than 500.....	2	12	9	20.0	20.0	14.8
500-999.....	2	14	8	40.0	43.3	27.9
1,000-1,999.....	1	6	9	50.0	53.3	42.6
2,000-2,999.....		4	10	50.0	60.0	59.0
3,000-3,999.....		1	6	50.0	61.7	68.8
4,000-4,999.....	1	3	2	60.0	66.7	72.1
5,000-9,999.....	1	9	5	70.0	81.7	80.3
10,000-19,999.....	2	6	3	90.0	91.7	85.2
20,000-29,999.....		1	1	90.0	93.3	86.9
30,000 or more.....	1	4	8	100.0	100.0	100.0
Total.....	10	60	61			

TABLE 20.—Scales: Average number officially examined in 1 year in stated number of jurisdictions, by population

Population (thousands)	Average number examined in—			Number of—		
	States	Cities	Counties	States	Cities	Counties
Less than 20.....						
20-29.9.....					1	1
30-39.9.....						5
40-49.9.....		446	956		2	8
50-49.9.....		1,002	1,094		7	9
50-99.9.....		1,524	1,376		17	10
100-149.9.....		2,238	3,099		12	7
150-199.9.....		1,757	3,360		4	5
200-249.9.....		5,230	3,790		3	4
250-499.9.....	4,877	7,364	4,228	3	13	6
500-999.9.....	15,274	17,150	16,860	2	3	2
1,000-1,999.9.....	17,986		7,711	3		1
2,000-2,999.9.....	14,399	15,449	62,546	2	1	1
Average.....	12,793	3,911	3,679			
Total.....				10	63	59

TABLE 21.—Scales: Summary of testing activities in 1 year in stated number of jurisdictions, by type

## STATES

Type of scale	Number of jurisdictions	Total number examined	Proportion approved			Proportion not approved		
			Without adjusting	After adjusting	Total	Condemned for repair	Confiscated and destroyed	Total
Large capacity (over 400 lbs.).....	4	Scales 5,503	Percent 68.2	Percent 15.9	Percent 84.1	Percent 14.0	Percent 1.9	Percent 15.9
Small capacity (400 lbs. maximum).....	7	59,932	87.4	4.5	91.9	7.9	.2	8.1
Person weighers.....	1	12	83.3	0	83.3		16.7	16.7

## CITIES

Large capacity (over 400 lbs.).....	58	38,628	77.6	13.9	91.5	7.7	0.8	8.5
Small capacity (400 lbs. maximum).....	59	193,461	78.1	12.9	91.0	7.6	1.4	9.0
Person weighers.....	39	4,875	78.9	8.9	87.8	10.8	1.4	12.2
Prescription.....	34	4,420	86.2	8.0	94.2	5.6	.2	5.8

## COUNTIES

Large capacity (over 400 lbs.).....	57	37,221	73.9	16.9	90.8	8.7	0.5	9.2
Small capacity (400 lbs. maximum).....	58	162,342	81.8	11.9	93.7	5.4	.9	6.3
Person weighers.....	39	7,527	66.5	11.6	78.1	17.8	4.1	21.9
Prescription.....	34	1,462	92.1	4.1	96.2	3.2	.6	3.8

TABLE 22.—Weights: Average number officially examined in 1 year in stated number of jurisdictions, by population

Population (thousands)	Average number examined in—			Number of—		
	States	Cities	Counties	States	Cities	Counties
Less than 20.....	Weights	Weights 614	Weights 917		1	1
20-29.9.....			575			5
30-39.9.....		346	1,488		1	8
40-49.9.....		1,433	1,573		7	8
50-99.9.....		1,783	2,381		14	9
100-149.9.....		2,813	2,419		12	7
150-199.9.....		3,180	5,063		3	5
200-249.9.....		6,964	2,418		3	4
250-499.9.....	9,848	11,226	4,243	2	11	6
500-999.9.....	9,919	30,800	20,910	1	3	2
1,000-1,999.9.....	8,996		16,045	2		1
2,000-2,999.9.....	20,227	5,588	58,029	2	1	1
3,000-3,999.9.....	1,275			1		
Average.....	11,167	5,743	4,263			
Total.....				8	56	57

TABLE 23.—Weights: Summary of testing activities in 1 year in stated number of jurisdictions, by type

STATES

Type of weight	Number of jurisdictions	Total number examined	Proportion approved			Proportion not approved		
			Without adjusting	After adjusting	Total	Condemned for repair	Confiscated and destroyed	Total
Avoidupois.....	6	Weights 31,166	Percent 94.4	Percent 3.8	Percent 98.2	Percent 0.5	Percent 1.3	Percent 1.8
Prescription.....								

CITIES

Avoidupois.....	52	249,756	96.6	1.3	97.9	0.7	1.4	2.1
Prescription.....	27	56,079	95.1	.9	96.0	.2	3.8	4.0

COUNTIES

Avoidupois.....	55	219,615	96.6	1.1	97.7	1.0	1.3	2.3
Prescription.....	26	21,294	96.4	.7	97.1	1.1	1.8	2.9

TABLE 24.—Pumps and retail-type meters: Average number officially examined in 1 year in stated number of jurisdictions, by population

Population (thousands)	Average number examined in—			Number of—		
	States	Cities	Counties	States	Cities	Counties
Less than 20	<i>Units</i>	<i>Units</i> 381	<i>Units</i> 331		1	1
20-29.9			524			5
30-39.9		273	740		1	8
40-49.9		367	827		7	9
50-99.9		735	1,279		18	10
100-149.9		976	1,768		12	7
150-199.9		1,263	3,197		4	5
200-249.9		3,669	3,471		3	4
250-499.9	3,652	2,886	3,634	3	13	7
500-999.9	10,012	6,118	4,617	2	3	2
1,000-1,999.9	10,105		6,094	3		1
2,000-2,999.9	15,643	15,278	21,373	2	1	1
3,000-3,999.9	16,739			1		
Average	9,938	1,831	2,225			
Total				11	63	60

TABLE 25.—Miscellaneous weighing or measuring apparatus: Average number of units officially examined in 1 year in stated number of jurisdictions, by population

Population (thousands)	Average number examined in—			Number of—		
	States	Cities	Counties	States	Cities	Counties
Less than 20	<i>Units</i>	<i>Units</i> 140	<i>Units</i> 477		1	1
20-29.9			6,789			6
30-39.9		1,258	1,871		1	8
40-49.9		720	9,449		7	9
50-99.9		9,673	6,349		16	11
100-149.9		73,368	2,346		12	7
150-199.9		7,160	2,356		4	5
200-249.9		5,705	17,366		3	4
250-499.9	3,092	8,306	46,761	2	12	6
500-999.9	6,114	14,801	952,382	2	3	2
1,000-1,999.9	8,436		151,937	2		1
2,000-2,999.9	31,669	14,746,317	54,921	3	1	1
3,000-3,999.9	666			1		
Average	13,096	266,296	44,277			
Total				10	60	61

82 INSPECTION AND CONTROL OF WEIGHTS AND MEASURES

TABLE 26.—Miscellaneous weighing or measuring apparatus: Summary of testing activities in 1 year in stated number of jurisdictions, by type

STATES

Type of apparatus	Number of jurisdictions	Total number examined	Proportion approved			Proportion not approved		
			Without adjusting	After adjusting	Total	Condemned for repair	Confiscated and destroyed	Total
		Units	Per cent	Per cent	Per cent	Per cent	Per cent	Per cent
Liquid capacity measures...	6	25,951	99.5	0	99.5	0.1	0.4	0.5
Lubricating oil bottles.....	2	5,078	99.9	0	99.9	0	.1	.1
Dry capacity measures.....	3	1,709	94.1	0	94.1	4.9	1.0	5.9
Linear measures.....	4	6,968	99.2	0	99.2	0	.8	.8
Fabric measuring devices.....	3	59	98.3	0	98.3	1.7	0	1.7
Taximeters.....	1	29	82.8	0	82.8	17.2	0	17.2
Calibrated vehicle tanks (fuel oil and gasoline).....	7	1,673	93.2	6.0	99.2	.8	0	.8
Fuel oil meters.....	2	308	100.0	0	100.0	0	0	0
Wholesale-type gasoline meters.....	3	397	86.9	8.5	95.4	2.3	2.3	4.6

CITIES

Liquid capacity measures...	58	88,450	94.3	2.4	96.7	1.3	2.0	3.3
Milk bottles.....	19	14,882,738	99.4	0	99.4	0	.6	.6
Lubricating oil bottles.....	32	84,576	99.0	0	99.0	.2	.8	1.0
Dry capacity measures.....	36	888,408	92.0	0	92.0	.5	7.5	8.0
Linear measures.....	41	13,489	91.1	.3	91.4	2.8	5.8	8.6
Fabric measuring devices.....	36	1,836	95.7	1.0	96.7	2.9	.4	3.3
Taximeters.....	19	6,023	90.3	3.1	93.4	5.4	1.2	6.6
Calibrated vehicle tanks (fuel oil and gasoline).....	38	1,862	83.5	11.7	95.2	4.5	.3	4.8
Fuel oil meters.....	34	3,264	82.2	14.1	96.3	3.7	0	3.7
Wholesale-type gasoline meters.....	22	4,642	81.2	12.4	93.6	4.8	1.6	6.4
Gas meters (not gasoline).....	2	260	97.1	0	97.1	2.9	0	2.9
Electricity meters.....	1	38	81.6	0	81.6	18.4	0	18.4
Other.....	6	2,100	85.1	3.1	88.2	8.7	3.1	11.8

COUNTIES

Liquid capacity measures...	55	408,430	92.1	3.8	95.9	2.6	1.5	4.1
Milk bottles.....	22	2,014,144	95.2	0	95.2	0	4.8	4.8
Lubricating oil bottles.....	36	80,208	98.6	.2	98.8	.1	1.1	1.2
Dry capacity measures.....	18	136,224	95.9	0	95.9	2.4	1.7	4.1
Linear measures.....	31	16,244	89.0	3.4	92.4	2.3	5.3	7.6
Fabric measuring devices.....	15	240	98.4	.4	98.8	1.2	0	1.2
Taximeters.....	1	164	70.7	0	70.7	29.3	0	29.3
Calibrated vehicle tanks (fuel oil and gasoline).....	41	2,665	91.0	8.2	99.2	.6	.2	.8
Fuel oil meters.....	14	896	79.9	11.6	91.5	8.5	0	8.5
Wholesale-type gasoline meters.....	20	1,620	74.7	13.5	88.2	11.2	.6	11.8
Other.....	4	8,832	90.1	3.5	93.6	2.4	4.0	6.4

TABLE 27.—*Coal: Average quantity weighed under official supervision, and proportion found short weight, in 1 year, in stated number of jurisdictions, by population*

Population (thousands)	Average quantity weighed in—			Average quantity short weight in—			Number of—		
	States	Cities	Counties	States	Cities	Counties	States	Cities	Counties
	<i>Loads</i>	<i>Loads</i>	<i>Loads</i>	<i>Loads</i>	<i>Loads</i>	<i>Loads</i>			
Less than 20.....		11	10		0	0		1	1
20-29.9.....			3			0			2
30-39.9.....		12	18		2	1		2	4
40-49.9.....		292	26		2	2		6	6
50-99.9.....		78	63		7	6		18	8
100-149.9.....		92	188		11	109		9	3
150-199.9.....		139	64		11	4		4	2
200-249.9.....		318	145		9	8		3	3
250-499.9.....	50	410	602	5	29	58	3	11	6
500-999.9.....	62	308		6	16		1	5	
1,000-1,999.9.....		161	89		10	10		1	1
2,000-2,999.9.....		1,262			51			1	
Average.....	53	213	155	5	12	21			
Total.....							4	61	36

TABLE 28.—*Bread: Average quantity weighed under official supervision, and average quantity found short weight, in 1 year, in stated number of jurisdictions, by population*

Population (thousands)	Average quantity weighed in—			Average quantity short weight in—			Number of—		
	States	Cities	Counties	States	Cities	Counties	States	Cities	Counties
	<i>Loaves</i>	<i>Loaves</i>	<i>Loaves</i>	<i>Loaves</i>	<i>Loaves</i>	<i>Loaves</i>			
Less than 20.....		503			0			1	
20-29.9.....			98			0			3
30-39.9.....			1,129			40			7
40-49.9.....		560	337		141	18		6	5
50-99.9.....		807	364		44	32		16	5
100-149.9.....		10,174	947		349	240		5	4
150-199.9.....		1,890	579		294	12		4	3
200-249.9.....		4,218	5,670		159	25		2	2
250-499.9.....	1,037	5,095	1,030	65	190	65	3	11	3
500-999.9.....	400	2,629	10,238	28	414	2,555	1	3	1
1,000-1,999.9.....	500	10,539		15	1,230		1	1	
2,000-2,999.9.....		2,586			353			1	
Average.....	802	3,214	1,270	48	194	131			
Total.....							5	50	33

TABLE 29.—*Packages of merchandise: Average number weighed under official supervision, and average number found short weight, in 1 year, in stated number of jurisdictions, by population*

Population (thousands)	Average number weighed in—			Average number short weight in—			Number of—		
	States	Cities	Counties	States	Cities	Counties	States	Cities	Counties
	<i>Pack- ages</i>	<i>Pack- ages</i> 804	<i>Packages</i> 1,807	<i>Pack- ages</i>	<i>Pack- ages</i> 0	<i>Packages</i> 263		1	
Less than 20.....									4
20-29.9.....		1,350	2,035		119	156		1	7
30-39.9.....		1,904	4,065		509	306		6	8
40-49.9.....		3,513	4,543		294	628		18	9
50-99.9.....		110,724	10,414		615	1,105		8	6
100-149.9.....		14,971	37,094		1,769	328		5	5
150-199.9.....		38,652	18,920		1,061	1,178		4	4
200-249.9.....		25,835	26,884	193	1,319	1,956	3	14	6
250-499.9.....	6,167	31,809	673,138		1,582	85,851		4	2
500-999.9.....	60,060	37,942	121,475	2,020	11,982	2,986	3	1	1
1,000-1,999.9.....		300	247,296		16	22,751		1	1
2,000-2,999.9.....									
3,000-3,999.9.....									
4,000-4,999.9.....									
5,000-9,999.9.....		255,705			19,321			1	
Average.....	33,114	30,858	43,299	1,107	1,290	4,385	6	64	53
Total.....									

TABLE 30.—*Coal, bread, packages of merchandise: Jurisdictions distributed according to quantity weighed under official supervision, with cumulative proportions, 1 year*

## COAL

Quantity weighed (loads)	Number of—			Proportion of total jurisdictions in which not more than stated quantity weighed		
	States	Cities	Counties	States	Cities	Counties
				<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
0-49.....	13	28	30	60.0	43.1	63.8
50-99.....	2	8	5	100.0	55.4	74.5
100-199.....		12	6		73.8	87.2
200-299.....		3	2		78.5	91.5
300-399.....		2	1		81.6	93.6
400-499.....		3			86.2	93.6
500-999.....		6	2		95.4	97.9
1,000 or more.....		3	1		100.0	100.0
Total.....	5	65	47			

## BREAD

Quantity weighed (loaves)	Number of—			Proportion of total jurisdictions in which not more than stated quantity weighed		
	States	Cities	Counties	States	Cities	Counties
				<i>Percent</i>	<i>Percent</i>	<i>Percent</i>
0-99.....		9	5		17.0	14.3
100-199.....	1	3	4	20.0	22.6	25.7
200-299.....		4	5	20.0	30.2	40.0
300-399.....		4	6	20.0	37.7	57.2
400-499.....	1	1	3	40.0	39.6	65.7
500-999.....	2	11	3	80.0	60.4	74.3
1,000-4,999.....	1	13	6	100.0	84.9	91.4
5,000 or more.....		8	3		100.0	100.0
Total.....	5	53	35			

1 Includes 1 State in which no coal weighed under supervision.

2 Includes 4 cities in which no coal weighed under supervision.

3 Includes 11 counties in which no coal weighed under supervision.

4 Includes 3 cities in which no bread weighed under supervision.

5 Includes 2 counties in which no bread weighed under supervision.



TABLE 30.—Coal, bread, packages of merchandise; Jurisdictions distributed according to quantity weighed under official supervision, with cumulative proportions, 1 year—Continued

PACKAGES OF MERCHANDISE

Quantity weighed (packages)	Number of—			Proportion of total jurisdictions in which not more than stated quantity weighed		
	States	Cities	Counties	States	Cities	Counties
0-999.....	2	16	12	Percent 33.3	Percent 24.6	Percent 22.6
1,000-1,999.....		13	7	33.3	44.6	35.8
2,000-2,999.....		5	5	33.3	52.3	45.3
3,000-3,999.....		1	4	33.3	53.8	52.8
4,000-4,999.....	1	2	1	50.0	56.9	54.7
5,000-9,999.....		6	9	50.0	66.2	71.7
10,000-49,999.....	2	17	8	83.3	92.3	86.8
50,000 or more.....	1	5	7	100.0	100.0	100.0
Total.....	6	65	53			

\* Includes 1 city in which no packages of merchandise weighed under supervision.

TABLE 31.—Average number of prosecutions for violations of weights and measures laws, ordinances, or regulations, made in 1 year in stated number of jurisdictions, by population

Population (thousands)	Average number in—			Number of—		
	States	Cities	Counties	States	Cities	Counties
Less than 20.....		0	3.0		1	1
20-29.9.....			0			6
30-39.9.....		1.0	1.3		3	6
40-49.9.....		1.3	1.6		6	8
50-99.9.....		5.1	5.0		18	11
100-149.9.....		9.2	8.3		8	6
150-199.9.....		3.5	2.2		6	4
200-249.9.....		15.5	8.8		4	4
250-499.9.....	2.7	26.7	6.2	3	15	6
500-999.9.....	0	59.8	7.5	1	5	2
1,000-1,999.9.....	5.0	2.0	5.0	1	1	1
2,000-2,999.9.....	7.0	139.0	133.0	2	1	1
3,000-3,999.9.....						
4,000-4,999.9.....						
5,000-9,999.9.....		8,337.0			1	
Average.....	3.9	136.8	6.5			
Total.....				7	69	56

TABLE 32.—Average amount of fines imposed in 1 year for violations of weights and measures laws, ordinances, or regulations, in stated number of jurisdictions, by prosecutions

Prosecutions (number)	Average amount in—			Number of—		
	States	Cities	Counties	States	Cities	Counties
Less than 5.....	Dollars 42	Dollars 208	Dollars 58	4	30	36
5-9.....	112	1,181	325	2	8	4
10-14.....	255	250	250	1	4	3
15-19.....		450			4	
20-29.....		370	350		5	1
30-39.....		1,000	480		1	1
40-49.....		450	220		1	1
50-99.....		785			3	
100-149.....		959	5,326		2	1
150 or more.....		13,100			2	
Average.....	92	871	224			
Total.....				7	60	47

TABLE 33.—Average number of jail sentences imposed in 1 year for violations of weights and measures laws, ordinances, or regulations, in stated number of jurisdictions, by prosecutions

Prosecutions (number)	Average number in—			Number of—		
	States	Cities	Counties	States	Cities	Counties
Less than 5.....						
5-9.....	0	0.2	0.1	3	31	33
10-14.....	0	0	.7	1	9	6
15-19.....	0	0	.5	1	3	4
20-29.....		.3			3	
30-39.....		1.0	11.0		5	1
40-49.....		0	2.0		1	1
50-99.....		.5	0		2	1
100-149.....		0	8.0		1	1
150 or more.....		2.0			1	
Average.....	0	.3	.7			
Total.....				5	56	47

TABLE 34.—Comparison of 3 selected cities with respect to weights and measures activities

[Population class 300,000 to 400,000]

Item	City A	City B	City C
<b>Staff:</b>			
Weights and measures inspectors..... number.....	1	3	2
Persons on administrative staff..... do.....	7	2	1
Total staff..... do.....	8	5	3
<b>Budget:</b>			
Budget furnished..... dollars.....	18,000	12,500	5,941
Fees collected but not segregated for use by department..... do.....		2,394	362
Budget needed..... do.....	18,000	19,160	9,000
<b>Testing activities:</b>			
Establishments within jurisdiction..... number.....	3,600	4,500	4,000
Establishments visited..... do.....	3,600	3,500	3,000
Visits made..... do.....	7,200	8,000	3,778
<b>Tests of apparatus:</b>			
Scales examined..... number.....	11,256	4,129	796
Proportion approved without adjusting..... percent.....	98.2	49.4	64.2
Proportion approved after adjusting..... do.....	0	34.1	0
Proportion condemned for repair..... do.....	0.8	15.5	35.8
Proportion confiscated and destroyed..... do.....	0.4	1.0	0
Weights examined..... number.....	17,288	1,679	4,393
Proportion approved without adjusting..... percent.....	92.6	86.0	98.82
Proportion approved after adjusting..... do.....	0	13.2	0
Proportion condemned for repair..... do.....	0	0.8	0.02
Proportion confiscated and destroyed..... do.....	7.4	0	1.16
Pumps and retail-type meters examined..... number.....	6,361	2,447	2,609
Proportion approved without adjusting..... percent.....	99.9	78.8	78.7
Proportion approved after adjusting..... do.....	0	0.3	0
Proportion condemned for repair..... do.....	0.1	20.9	21.3
Proportion confiscated and destroyed..... do.....	0	0	0
Units of miscellaneous apparatus examined..... number.....	17,973	2,083	7,025
Proportion approved without adjusting..... percent.....	99.8	71.2	99.6
Proportion approved after adjusting..... do.....	0	21.9	0
Proportion condemned for repair..... do.....	0.1	6.9	0.3
Proportion confiscated and destroyed..... do.....	0.1	0	0.1
<b>Supervisory activities:</b>			
Special investigations..... number.....		4,261	4,000
Proportion of investigations disclosing short weighing or measuring..... percent.....		42.2	12.5
Coal weighed under supervision..... loads.....	36	0	100
Proportion found short weight..... percent.....	2.8		10.0
Bread weighed under supervision..... loaves.....	600	3,800	1,000
Proportion found short weight..... percent.....	5.0	21.1	0
Packaged commodities weighed under supervision..... packages.....	2,801	3,882	39,619
Proportion found short weight..... percent.....	4.7	39.5	13.8
Is money provided for purchase of commodities by weights and measures inspectors?.....	Yes	No	No
<b>Prosecution activities:</b>			
Prosecutions..... number.....	2	27	6
Aggregate amount of fines..... dollars.....	(1)	470	85
Jail sentences..... number.....	0	0	0
Are penalties adequate?.....	Yes	No	No

<sup>1</sup> 1 fine imposed, amount unreported.



